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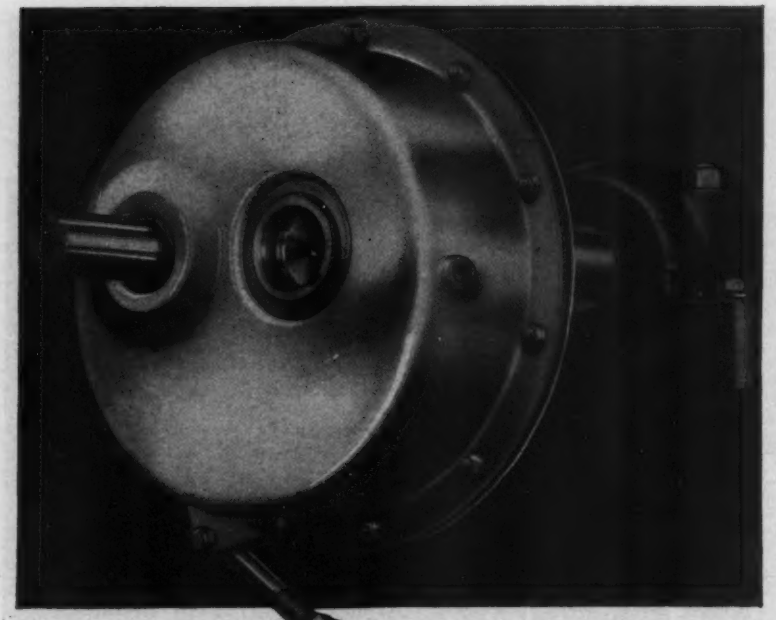

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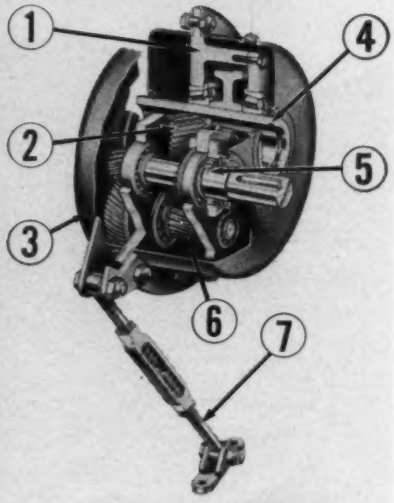

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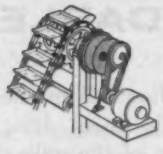

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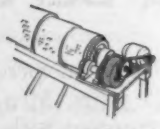

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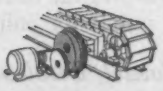

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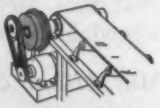

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VOLUME 37 • NUMBER 12 • MARCH 1956

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The Paper Industry

MARCH 1956

Industry's stake in research

The observations most frequently overheard at the conclusion of the 41st Annual TAPPI meeting referred in elated terms to the general high quality of both the papers and their presentation.

What was it that made this conference excel? Why was the general quality of papers of such a high standard? What is the explanation for capacity attendance in the various conference rooms? Why was there so much less reticence on the part of the speakers to disclose vital information?

It seems to us that the answer to these questions lies in the fact that scientific research has reached a level of maturity in the pulp and paper industry; and, with this coming of age, it has won for itself a place on a more equal footing. It is no longer necessary to prove the indispensability of research to this industry; and, to a far lesser degree, is there any need to apologize for its existence or its sometimes inherently slow rate of progress.

The trend is unmistakably established. The acceptance of research as a basic function of an industrial operation goes unchallenged. Even in those mills where papermaking is still being regarded more as an art than a technological operation, management is becoming increasingly more inclined to let a technically trained or technically experienced man be the artist.

But, while the recognition of the contribution of scientific research is established, it remains of some concern that the pulp and paper industry is not spending as much on research in proportion to its sales volume as some other industries. As stated by Allen Abrams, director of Marathon Corp., at the APPA meeting, the electrical, chemical, and drug manufacturing industries spend 2.7, 2.9, and 4.9 per cent respectively of their sales volume on research, as compared to only a fraction of one per cent spent by the pulp and paper industry.

In this connection Mr. Abrams also referred to a report on the role of research in economic growth by Ray Ewell of the National Science Foundation. The conclusion reached in this report was that, "Research might be the most important factor in increasing the productivity of the industry . . . that the annual return on the investment in industrial research is somewhere between 100-200 per cent".

In projecting industrial production into the future, it is customary to correlate such production with anticipated increases in population. While the projected industrial expansion rate, even on this basis alone, is quite impressive, we venture to predict that the height of success is reserved for those industrial establishments whose managements plan in terms of considerably increased demands for goods than those stipulated by an increase in population.

If we think in terms of progress, we must visualize a continuously rising standard of living. With a higher standard of living come new wants, and these wants can be met only through diligent and sustained scientific research, both fundamental and applied.

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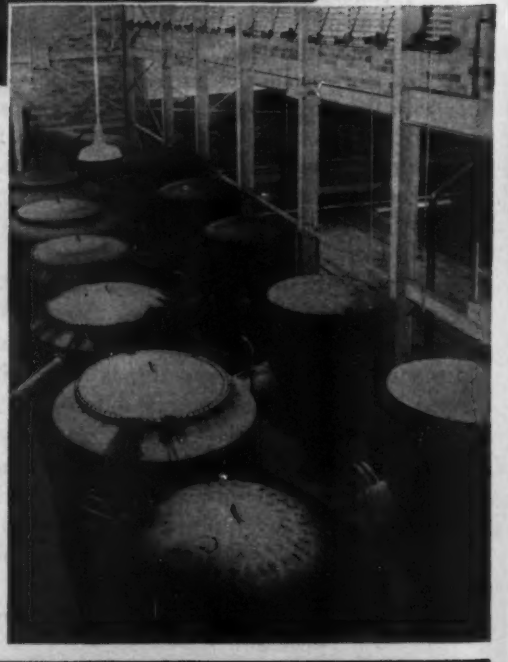

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Woodlands Managers Report on Current Problems

TECHNOLOGICAL PROGRESS in the paper industry has known few bounds in the post-war years. In almost every phase of pulp and paper manufacture improvements have made the industry almost unrecognizable from its pre-1939 stage.

However, one phase of pulp and paper has been somewhat overlooked in the speedy advance: woodlands operations. For that reason, THE PAPER INDUSTRY has contacted some of the leaders in the field for their reactions to two leading questions:

1. Are we making sufficient progress in woodlands operations, and

2. What in your opinion is the most pressing problem confronting woodlands operations?

Representative reactions are listed herewith:

A. F. Koller, Manager

North American Timber Co. Div., American Box Board Co.

(1) Probably in terms of the nation-wide picture, our area has not made sufficient progress in woodlands operations when we consider the impact of mechanization on the industry as a whole. Our annual consumption of 150,000 cords is supplied by over 500 producers who are spread over a wide area. Consequently, most operations are run by very small crews. Therefore, the average producer finds that high-priced power equipment is hard to obtain.

Mechanization is desirable, yet some equitable plan of financing and individual operation expansion remains to be worked out in our area.

(2) A pressing problem in our area is that of maintaining the 12-man seasonal exemption clause in the Fair Labor Standards Act.

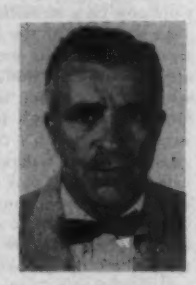
The American Box Board Co. purchases most of its pulpwood from numerous small, individual operators and farmers who are spread over a very wide area and in general operate with fewer than 12 employees. In cutting wood, these people are guided by seasonal and daily variations in the weather and often by daily variations as to their farm duties which is their primary work.

They are not in a position to maintain the detailed records required of larger companies under the Fair Labor Standards Act.

Because of the "hot goods" provision of the Fair Labor Standards Act, this company and others have a legitimate interest in determining that any person who supplies them with materials and who is subject to the Act complies with the minimum wage and record-keeping requirements of the Act. Therefore, the company has a real interest in any amendment relating to these small woods operators which might either put them out of business or place them in a position where they could not comply with the technical requirements of the law to the extent that this company could not safely buy from them.

G. B. Amidon, Director of Forest Management

Minnesota & Ontario Paper Co.



(1) It is my opinion that really impressive progress in woodlands operations has been made in the United States during the past ten years. Industry in all regions of the country has given ample evidence that it fully recognizes the importance of growing trees as a crop and the principle of sustained-yield forestry. Impressive as past progress has been, however, I believe there is no justification for complacency. This because of the increasing amount of wood fiber required by our industry. For this reason we should, and undoubtedly will, make more rapid progress in the future than we have in the past.

(2) I believe there are two major problems confronting woodlands operations.

One is the need for more complete utilization of our wood supplies, which means utilizing more of each tree cut, utilizing more of the different kinds of trees that grow in the forest, mainly hardwoods, and using mature and overmature timber that is inaccessible and therefore going to waste. This is tied to the research job of finding ways to utilize present leftovers and trees with limited present use. But perhaps of more significance is the job of building roads and opening presently inaccessible areas in order to use mature and overmature trees that are now rotting in the woods.

The second problem is one concerning woods labor. It is our opinion that the job of getting more people in the timbered areas to recognize woods work as a permanent vocation instead of a seasonal or temporary job is of real concern to the industry. This involves still greater mechanization in the woods, which is helpful in attracting younger men; providing less seasonal employment for woods workers, and in the development of woods operations which encourage family living with the job and home sufficiently close so that the woods worker can travel back and forth each day.

We will never have satisfactory woods labor until we recognize that the job has to be developed so the woods worker can live a normal family life. Our company and many others have gone a long way in this kind of a program, but I do believe that the industry generally needs to go much further in this direction and that it undoubtedly will in years to come.

F. L. Flatt, Manager of Woodlands

Spruce Falls Power & Paper Co. Ltd.

(1) We have made considerable progress in woods operations, particularly over the past ten years. Generally speaking, the progress has been slow but sound. However, much remains to be done, and if we are to maintain our competitive position further development is essential.

(2) The cost of wood delivered to the mill has to be reduced and this should be accomplished without having to reduce wages. In hauling, tremendous progress has been made, but as far as cutting is concerned we are still not too far advanced in methods from our grandfather's time. True, the power saw has made a decided contribution towards im-

proving man-day production, but at best it is only a partial answer. I believe that an entirely new approach to the problem of felling, limbing, bucking and piling is necessary, and that it should be possible to develop a machine that would carry out these operations in a much more economical manner than at present.

C. B. Davis, Vice President, Woodlands
Abitibi Power & Paper Co. Ltd.

(1) Progress, improvement, advancement, or whichever term one chooses, must be considered in relation to the purpose of woodlands operations. Woodlands operations exist to supply the required volume of wood at the lowest possible cost on a sustained basis.

In the light of the above, then, making sufficient progress means keeping the wood costs at their desired level, and we are not making sufficient progress. Woods labor is now strongly unionized. Government to a degree also controls labor costs through legislative action on unemployment insurance, workmen's compensation, etc. Governments—local, provincial and federal—are continually increasing their demands taxwise. Costs of equipment and materials used in the woods are beyond our control. The above three factors over which we have no control exert tremendous pressure to force wood costs upward. The only means by which a woodlands manager can act to control costs is method. Changes and modifications in pulpwood methods are the only tools left to a woodlands manager to improve his wood costs. The progress here is steady but not sufficient.

(2) This has been answered above. The problem is to maintain the desirable level of wood costs in the face of continually mounting costs over which the managers have no control.

A. M. Brooks, Manager
Timber Div., Ketchikan Pulp Co.

(1) At present we are covering the essentials in that we have established a wood supply sufficient for plant requirements and in cooperation with the Forest Service have 750,000 acres about half typed and inventoried.

(2) Our most pressing problem has been to establish our log supply in the short time allowed to us and is now to deveop this program along the well-established principles of good timber management and forestry as they can be applied to the conditions of timber, terrain and operations peculiar to this area. In our developments to date we have profited greatly from the local knowledge supplied by the Forest Service and those operators who have been in the area for many years. It is now plain that Alaska will play an important part in the future pulp developments on this continent due to its timber resources, but we would advise very careful advance consideration and planning for prospective operators.

Bruce G. Buell, Chief Forester
Marathon Corp.

(1) In an attempt to answer your question, I would say that we are making good progress. Whether or not that progress is sufficient is debatable. We certainly are going to have to grow, produce and process a lot more timber in the years ahead of us.

(2) It strikes me that one of the most pressing problems confronting us today is the utilization of the timber which is not currently being used. This covers non-merchantable trees left standing, logging residue, slabs and other forms of waste in manufacturing.

We have a tremendous amount of wood capable of yielding wood fiber or chemicals which is now being left behind in the woods. This is due to the relatively high cost of moving and converting this material, and also due to the relatively low demand, with the consequent low price, for this class of material. We need improvements in logging techniques and machinery so that this material can be moved from the woods and converted into usable form at lower cost. At the same time we need more research in our plants aimed at better methods, or new methods, of utilizing this low-value material.

Henry Dennis, Assistant Vice President
West Coast Timber Div., Scott Paper Co.

(1) To some extent every large integrated wood user has taken steps during recent years to assure continued maintenance of its raw material supply. The means employed has included adjustment of manufacturing schedules to the calculated capacity of forest holdings and an active program of experiment with logging techniques to reduce waste and improve recovery of high-value stumpage. Through prelogging, salvage relogging and the harvesting of smaller short rotation stands, an increasing share of the pulp industry's wood requirements is new material, production of which, apart from its obvious importance in conservation of wood resources, develops methods and techniques sure to be more general with the industry trend away from sawlogs to pulpwood. Good progress has been made in adapting logging practices in new directions, and more is sure to come.

(2) Probably the greatest handicap to the logging operator charged with supplying 12 months' requirements of a Pacific Northwest plant is a working season averaging only six to eight months in the high elevation areas. The excess peak capacity in equipment and man power and substantial inventory carrying charges add greatly to production and overhead costs; and the short work year, despite the high hourly rates of pay, makes it difficult to keep skilled employees or bring young men into logging as a career. A partial solution to this problem may in the future develop from further processing of material at the source, but no early answer is apparent to this challenging and costly problem.

E. B. Hurst, Manager of Timberlands
Consolidated Water Power & Paper Co.

(1) There seem to be sufficient supplies of pulpwood for the industry except possibly in spots, and in some areas there have been complaints the past few years that pulpwood could not be sold. Bills were introduced in at least two state legislatures to provide for marketing information on forest products. It is doubtful that such legislation would have been asked for if there had not been surpluses and lack of markets. It seems that progress is being made in the use of mechanical equipment, and available labor is better used everywhere. Definite progress is being made in the management of woodlands throughout the country—this being admitted by the U.S. Forest Service in "Timber Resources Review."

(2) The most pressing problem confronting woodlands operations in most areas is sufficient, proficient and efficient man power. The transient woods worker, or old-fashioned lumberjack, is disappearing from most sections and is not always being replaced by local or permanent workers. This

is especially true in what might be termed the forested areas. I am afraid that without the tractor and bulldozer, mechanical loaders, cranes, pulpwood grapples and power saws the lack of woods labor would be very serious today. I would certainly hate to go back to what we had 25 years ago.

Steady employment at wages comparable with what can be earned in comparable occupations and skills will do more than anything else to attract workers to the woods. Work in the woods can be dignified and as interesting as any other, and much more healthful and satisfying than many jobs. Mechanical equipment has removed most of the drudgery from the work, but I doubt that automation, which is presently worrying some, will come to the woods. The possibility of automatic bulldozers, cranes, or power saws seems rather remote. The shift of workers has been towards city and factory employment, but if the pulp and paper industry is to expand as much during the next 25 years as recent surveys indicate, more men will have to "take to the woods" to work.

G. E. Wing, Manager of Woodlands
Hollingsworth & Whitney Div., Scott Paper Co.

(1) My answer to this question would be "yes." In general, we are growing enough fiber to meet the demand; the manufacturing departments have gradually added new processes to utilize most of the species of wood that our lands produce, and the logging industry has developed to the extent that economical deliveries of wood can be made to the plants.

(2) My answer to this question is labor. The increased requirements for pulpwood demand an increasing supply of labor. Our present labor supply meets our requirements in developed areas, but there is a definite shortage of woods labor for logging operations in the large uninhabited tracts. It is an established fact that woods employees, in general, will not reside in logging camps away from their families and residences in sufficient numbers to meet our requirements.

Myles Standish, Superintendent of Woods Dept.
Kennebec Div., Hudson Pulp & Paper Corp.

(1) The pulp and paper industry seems to be making considerable progress along lines pertaining to actual logging and pulpwood operations but perhaps is not keeping up its end forestrywise. In most cases the land owned or controlled by industry is being kept in a productive state, but I think we have to extend ourselves a bit more in aiding the small owner and promoting better forest practices on land owned by farmers. This is pointed out in the recent "Timber Resources Review."

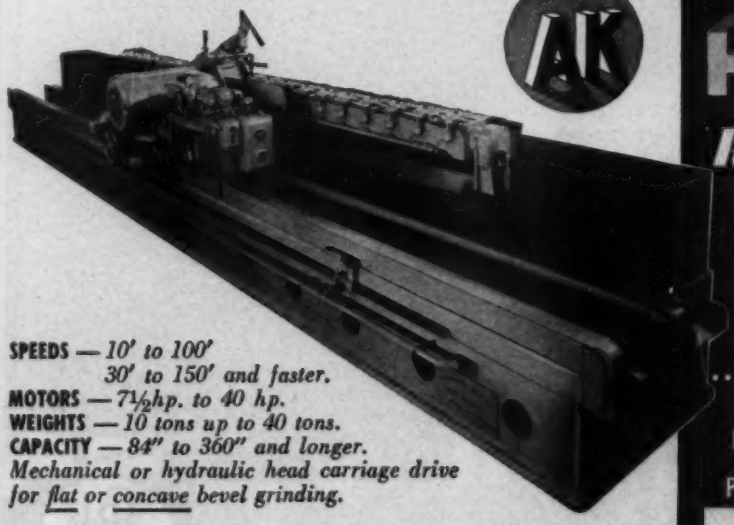
(2) The most pressing problem in our own woods operation is the $1.00 per hour minimum wage and the four-man exemption among our small producers.

Carl A. Olsson, General Manager, Woodlands Operations
Chesapeake Corp. of Virginia

(1) I think we ar making excellent progress, but what constitutes sufficient progress I do not know. All mills are increasing the efficiency of their woods operations, especially the efforts devoted to reforestation consistent with good forestry practice.

(2) In my opinion the most pressing problem confronting woodlands operations is that of education. The public as a whole has never been convinced that the forests of the United States are not being denuded by unscrupulous operators whose only desire is to—as the saying goes—"Get and get out."

MODEL AK



FOR ACCURACY — FINEST FINISHES

HANCHETT

knife grinders

for the

PULP AND PAPER INDUSTRIES

SPEEDS — *10' to 100'*
30' to 150' and faster.
MOTORS — *7½hp. to 40 hp.*
WEIGHTS — *10 tons up to 40 tons.*
CAPACITY — *84" to 360" and longer.*
Mechanical or hydraulic head carriage drive for flat or concave bevel grinding.

FOR GRINDING — HOG — BARKER PAPER TRIMMER AND DOCTOR BLADES

NEW MODEL SK-24 slitter knife grinder

FOR TOP — BOTTOM SLITTERS
CAPACITY 3" TO 24" DIAMETER
SEMI OR FULL AUTOMATIC
FINEST IN ACCURACY AND FINISH

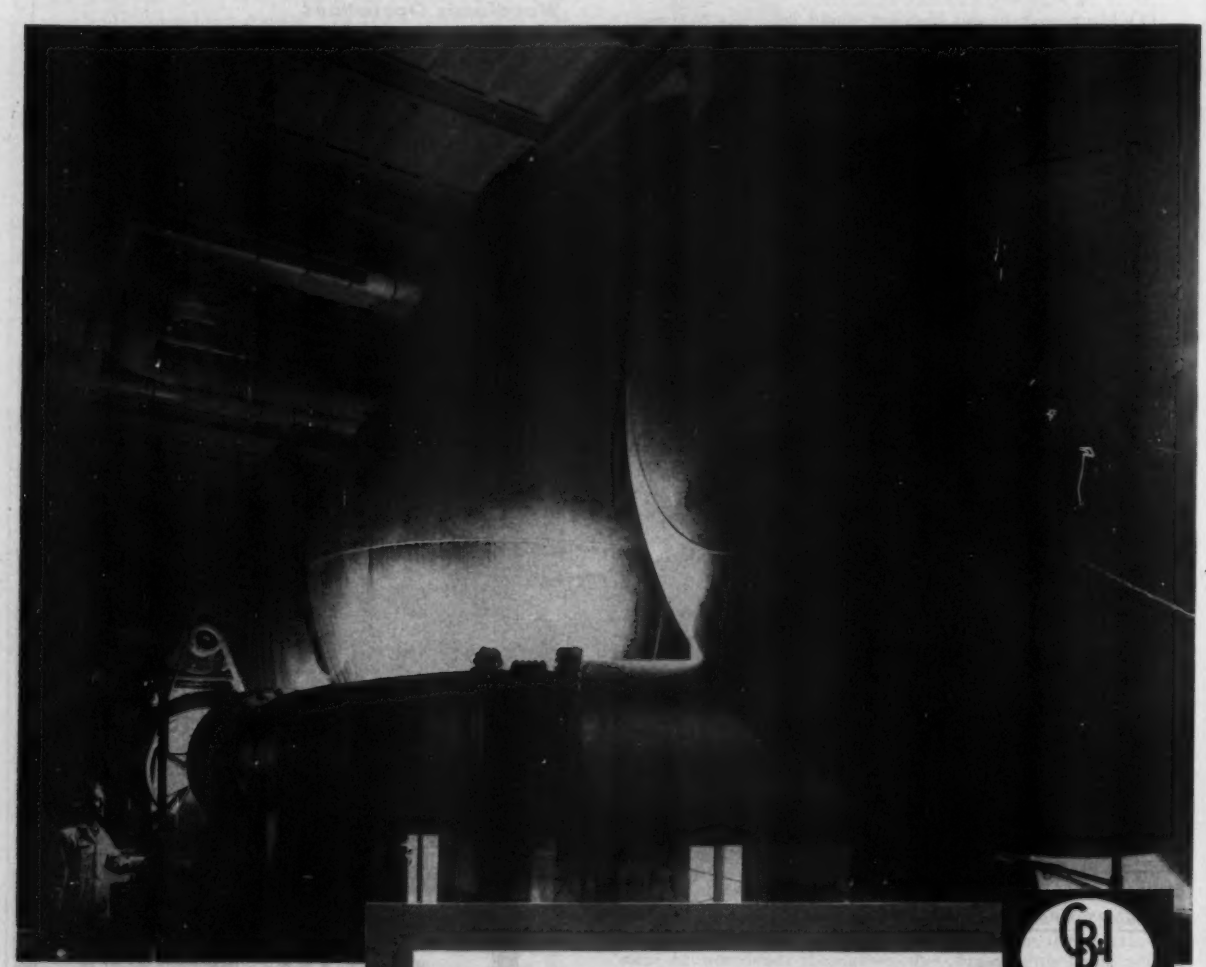
Other Models.
AL — medium heavy duty — *capacity 32" to 184"*
PL — normal production — *capacity 32" to 108"*

HANCHETT MANUFACTURING COMPANY
World's Largest Manufacturer of Knife Grinding and Saw Sharpening Machinery
MAIN OFFICE — Big Rapids, Michigan WEST COAST — Portland, Oregon

CB&I Builds Dump Chests Used in Sulphite Recovery Process

At the Weyerhaeuser Timber Company's plant at Longview, Washington, these four welded steel dump chests were installed as part of a sulphite recovery process. The structures, fabricated by Chicago Bridge & Iron Company, receive pulp which is washed from the digesters by sulphite waste liquors. The chests are protected on the inside by acid-resistant linings.

These structures illustrate the skilled workmanship CB&I employs in fabricating and erecting spherical structures.



16-ft. diam. by 71-ft. long chests supported by two ring girders spaced 37-ft. apart. The base of one girder on each vessel is fixed, the other moves as the shell expands and contracts.

Chicago Bridge & Iron Company

Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston
Los Angeles • New York • Philadelphia • Pittsburgh • Salt Lake City
San Francisco • Seattle • Tulsa
Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA.

high brightness
low moisture
minimum residue
controlled viscosity

UNIFORMITY

yours with **EDGAR PAPER CLAYS**

The most modern processing equipment from mine to final shipment, coupled with a quality control system . . . based firmly on the requirements of paper makers . . . which keeps a constant and rigid watch on product, assures you of the finest paper clays modern technology can produce.

EDGAR SPRAY SATIN is a good example... This new, pre-dispersed, spray-dried coating clay has gained immediate and wide acceptance as the leading coating clay of its type, not alone because of its excellent basic properties, but also because SPRAY SATIN is setting new standards of uniformity. SPRAY SATIN is the logical development in fine fraction coating clays due to the growing industry demand over the years for pre-dispersed H. T. . . . the pioneer spray-dried coating clay.

Uniformity is measurable... A measurement of the uniformity of EDGAR Paper Clays in your own mill will show clearly the day-after-day, month-after-month quality control which EDGAR Clays enjoy.

to help you select

the EDGAR *Paper Clay most suited to your particular requirements, there have just been published the full specifications and basic properties of all* EDGAR *Coating and Filler Clays . . . a copy is yours without obligation . . . please use the coupon below.*

Edgar

EDGAR PRODUCTS *from...*

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MINERALS & CHEMICALS CORPORATION OF AMERICA
4 Essex Turnpike, Menlo Park, New Jersey

Please send me, without obligation:

☐ Basic Properties of Edgar Paper Clays.
☐ Other first-hand information and samples pertaining to:

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name_____

company_____

address_____

city_____ zone_____ state_____

Appleton Twins For Dual Economy

A new Appleton supercalender to increase production.
A modern Appleton rewinder for more speed. Team them up for *twice* the efficiency to cope with today's higher costs.

Appleton supercalender illustrated: 150″ 12 roll, has shaftless unwind arrangement and automatic roll handling from elevated storage platform. Operates at 1800 f.p.m.

Appleton rewinder illustrated: 150″ 2 drum, also ruggedly built, with low center of gravity to assure vibration-free operation. Operates at 3500 f.p.m.

APPLETON MACHINE COMPANY
APPLETON WISCONSIN

CUSTOM-BUILDERS OF PULP, PAPER & TEXTILE MACHINERY · CALENDERS · FINISHING ROLLS · REWINDERS · SCREENS · DECKERS

How do New Huyck felts help you IMPROVE FINISH?

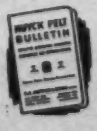
First . . . there are the many *new* felt designs and feltmaking techniques which so greatly improve finish characteristics.

Second . . . there's the *new* . . . Huyck-developed means of constructing yarns with *less tendency to mark* . . . fine enough to enter a needle's eye—yet sturdy enough to take plenty of abrasive wear and carry the load of a machine.

Next . . . *advanced engineering* has paved the way to *new* and revolutionary weaving processes which likewise contribute to *better finish.*

What do these *improvements* add up to? Just as an example, Board Mill Superintendents repeatedly tell us their *finish improves* when Huyck top felts are used.

Out of Huyck's continuing research and development are coming other *new ideas for improving finish.* Your Huyck Sales Engineer and Field Service Engineer will keep you posted.



Free!

Write today for your free copy of the new Huyck Felt Bulletin (Vol. II, No. 9), "The Effect of Paper Making Chemicals on Felt Life".

NEW!

HUYCK FELTS

FIRST IN QUALITY . . . FIRST IN SERVICE

F. C. HUYCK & SONS • Rensselaer, New York
Established 1870

THE VALVE THAT
CONQUERS
FLASHING
CONDENSATES
Better Control, with Lower
Initial and Maintenance Costs
• Eliminates special construction
• Eliminates liners
• Minimizes downstream piping erosion
• Eliminates cavitation
• No welded-in seat rings
Use Annin Valves—automatic, remote operated cylinder, and manual valves—for flashing condensates at all pressures and temperatures.
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WRITE TODAY FOR ILLUSTRATED CATALOG 1500 B
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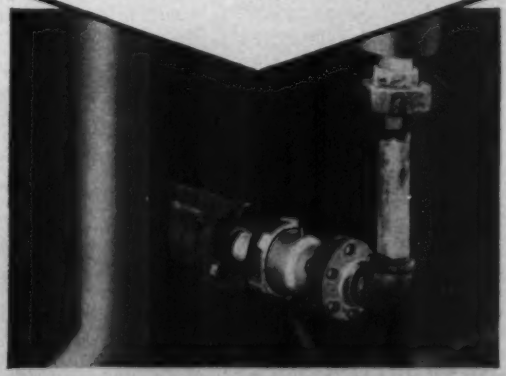
BARCO REVOLVING JOINTS

ON JOB 4 YEARS —NO REPAIRS!

These 1" Barco Type IBR Revolving Joints shown in the accompanying photographs (syphon style, above; single flow style, below) handle 45 psi steam at 20 to 30 RPM and run up to 8 hours per day. Their record of four years' service without repairs under normal conditions of temperature, pressure, and speed shows that BARCO IS YOUR BEST INSURANCE FOR LONG, TROUBLE-FREE SERVICE when you need *rotary steam joints* on rolls, dryers, drums, calendars, and mixers.



Performance that Pays Dividends IN PAPER MILLS

HOW MUCH is it costing you to use less efficient types of rotary joints? . . . For Repair Parts? . . . For "Down Time"? . . . For Extra Power Costs? CHECK YOUR RECORDS—then look at these Barco advantages:

- Trouble-free Performance! Thanks to long lasting Barco V-Type Seal Rings.
- Low Maintenance; No Adjusting. Easy to inspect or service, with no special tools required.
- Low Torque—Cuts Power Costs up to 50%—particularly, at higher pressures.
- Unexcelled Ability to withstand Vibration and Hard Usage.
- Better Temperature Control where steam is used for heating rolls due to better circulation. Barco Joints hold seal standing or running.

You can prove it on your own equipment! Make this test now with new, improved Barco Revolving Joints. Send for complete information and a copy of Catalog No. 300.

● CATALOG 300

SEND FOR INFORMATION

BARCO MANUFACTURING CO.
526D Hough St., Barrington, Illinois

Gentlemen:
Please send me information about Barco Revolving Joints checked at right.

Name_____

Company_____

Address_____

- ☐ Single flow styles. Series 150. Sizes ½" to 2".
- ☐ Syphon Styles. Series 150. Sizes ½" to 2".
- ☐ Revolving syphon styles. Sizes 1" to 2".
- ☐ Series 250 for higher pressures. Sizes 2½" and 3".
- ☐ Heavy duty joints. Sizes up to 5".
- ☐ High speed joints. Size ¼".

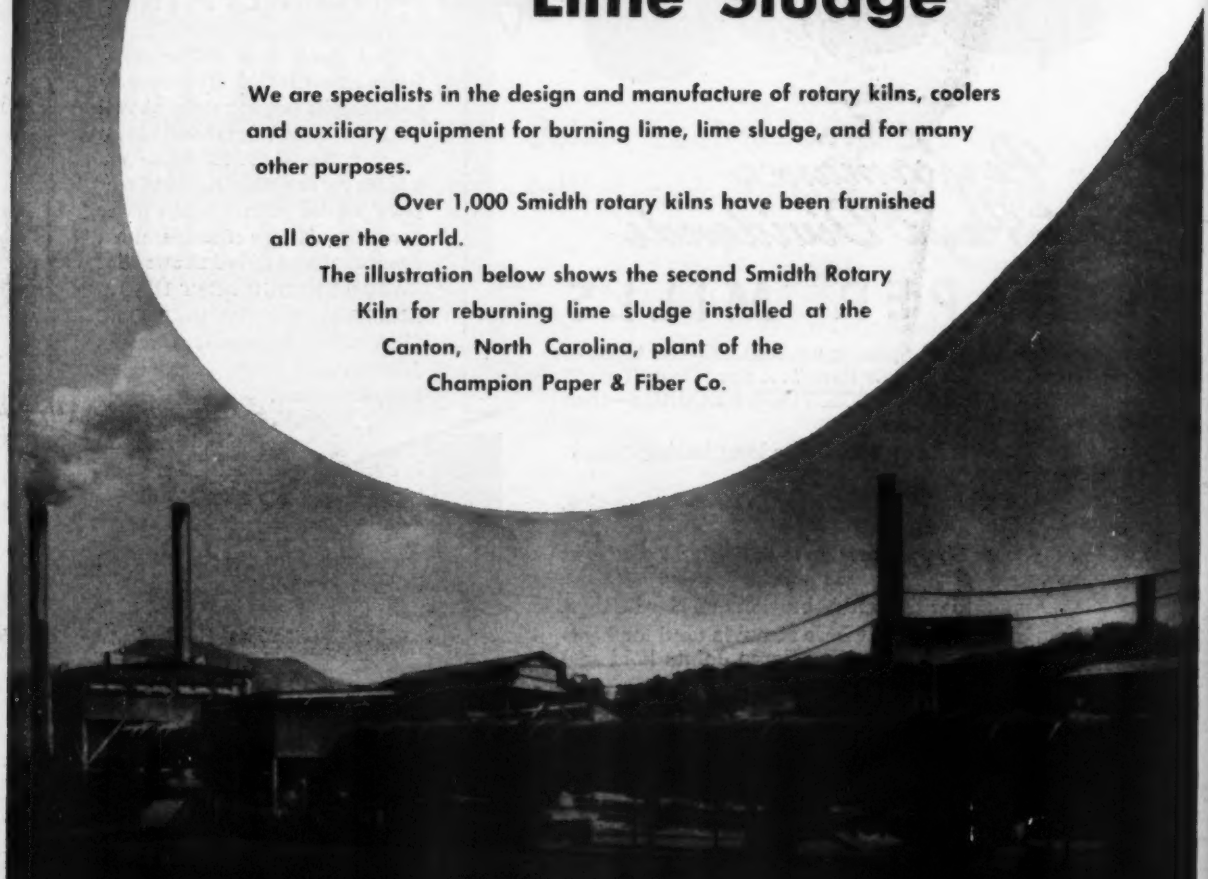
SMIDTH Rotary Kilns

For reburning Lime Sludge

We are specialists in the design and manufacture of rotary kilns, coolers and auxiliary equipment for burning lime, lime sludge, and for many other purposes.

Over 1,000 Smidth rotary kilns have been furnished all over the world.

The illustration below shows the second Smidth Rotary Kiln for reburning lime sludge installed at the Canton, North Carolina, plant of the Champion Paper & Fiber Co.



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CHAIN BELT

answers your Wood Handling Problems...

with drive chains

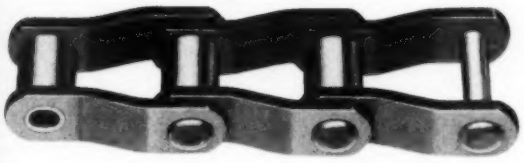
that give more service at lower cost

...keep production humming!

Here's a good way to solve the problem of moving wood through your production lines — the *complete* line of Rex Roller and Chabelco Drive Chains.

Rex Roller Chains combine the ultimate in workmanship, precision manufacture, skillful hardening and selected metals to produce chains of unequaled durability. These chains work at peak performance over long periods . . . are famous for their low maintenance and long lasting, cost-cutting qualities.

Rex Chabelco Drive Chains are the first choice of lumber or pulp plants where extreme conditions of dust, dirt, temperature or shock loads are present. Precision made and long lasting, yet they operate on inexpensive cast sprockets.



Rex Chabelco Drive Chain

Precision-built to close tolerances, this Rex Chabelco Drive Chain is an ideal choice on heavy-duty drives of slow to moderate speeds. Frequently used as a replacement for cast chains where greater strength, higher speeds and longer life are desired. Advanced heat-treatment methods assure long, economical, trouble-free service.

Rex Roller Drive Chain

Where loads range from light to heavy on high-speed drives, Rex Roller Drive Chain will give you the ultimate in service. These chains are designed to handle the heavy shock loads of rugged wood handling equipment. They are available in single or multiple strands. Their close tolerances, special heat-treatment, and precision manufacture assure the most efficient operation at the lowest cost.

AND FOR YOUR OTHER CHAIN AND CONVEYING NEEDS . . .

CHAIN BELT COMPANY

LEADERSHIP . . . through creative engineering

CHAIN BELT has the answer to lower costs for every WOOD HANDLING job!

• Here, from the *complete* line of CHAIN Belt products you will find the answer to your power transmission, conveying or elevating problems. Not only will you find the exact chain, idler or bearing to fit your work — you will find the highest quality and dependability . . . quality built on over half a century's experience supplying the forest products industry.

Carefully selected metals . . . skillful hardening or heat-treatment . . . experienced workmanship and design . . . combine to produce the finest products — products that give you longer service, reduce down-time and cut maintenance costs. Whatever your wood handling problem, CHAIN Belt will give you the cost-cutting answers.

Rex H-Type Mill Chain — Most popular of all sawmill size chains for conveyor use. A tough, versatile chain with special wearing shoes for sliding.

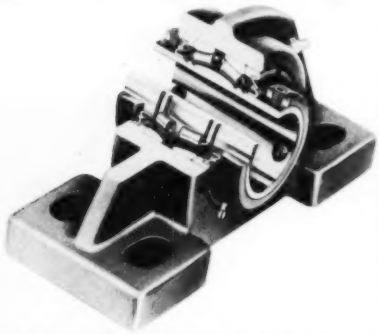
Rex H-Type Mill Conveyor Chains—Used for conveying slabs, chips, sawdust and refuse. Heavy, one-piece links with thick barrel provide long wear and good scraping action.

Rex Durobar and Combination Chains — A proven standard for wood handling service. Eccentric barrel of Durobar chain reduces wear on both chain and sprockets.

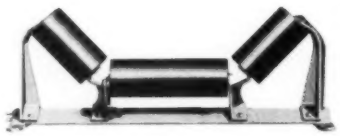
Rex Roller Drive Chain—The ultimate in high-speed drive chain. Highly flexible to withstand heavy shock loads. Precision-made for longest life. Available in single or multiple strands for a variety of drive uses.

Rex Roof-Top Transfer Chains — Primarily a green chain, but frequently found in sawmill transfer service. Choice of peaked or flat roof-top design. Flat roof generally used for handling finished lumber as it will not score.

Rex Chabelco Chains — For severe conveyor service, Rex Chabelco Chains are first choice. Available in both straight and offset side bar construction. Also special Chabelco Chains designed for log deck, log haul-up, trimmer, etc. service.



Shafer Self-Aligning Roller Bearings — These bearings combine the best advantages of the roller and the ball by using concave rollers operating between convex races. Their stamina and dependability have been proved under extreme load conditions found in the lumber and pulp industries. Their reserve capacity is your assurance of longest life and continuous peak performance.



Rex Style No. 46 Troughing Idler — Specially designed for handling wood chips. Concentrating rolls of the idler are sloped at 45° to provide exceptional carrying capacity. This feature permits loading of chips close to the belt edge without spillage and gives the belt additional carrying capacity when compared to the conventional 20° sloped idlers.

CHAIN Belt Company
Dept. FP-1
Milwaukee 1, Wisconsin

☐ Please send catalog on Rex products for the Forest Products Industry.

☐ I would like to discuss my wood handling problems with a CHAIN Belt District Sales Engineer.

Name.....

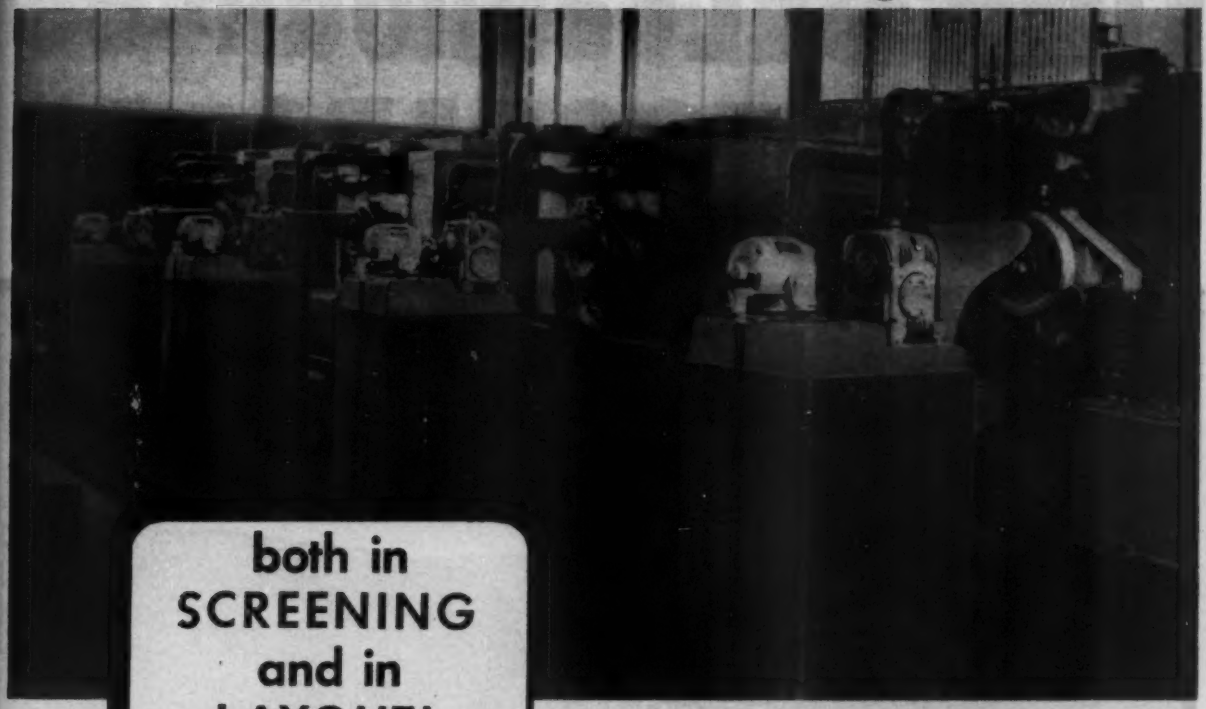
Company.....

Address.....

City..... State.....

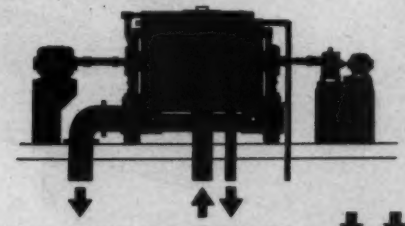
CHAIN BELT COMPANY
MILWAUKEE 1, WISCONSIN

For a Real "Clean Job"–

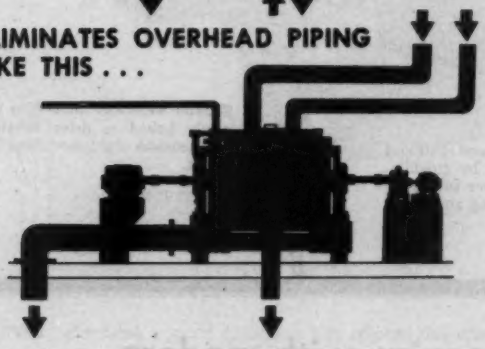


both in SCREENING and in LAYOUT!

INSTALLED LIKE THIS . . .



ELIMINATES OVERHEAD PIPING LIKE THIS . . .



IMPCO LINDBLAD PULP SCREEN

As a top performer in pulp screening, the Impco Lindblad has many outstanding features. For instance, due to its unique vat design, at no extra cost to the mill, sub-floor piping is possible. This means significant savings in piping expense on the runs for inlet and outlet piping. The neat arrangement provides uncluttered tending aisles and requires minimum floor space in either single or multi-screen installations.

These higher density type vibrating units are delivering quality pulps at densities above 1.5% A.D. in bleached, unbleached, semi-chemical and board mill installations.

For complete information on this screen, send for Bulletin B4-1.

IMPCO®

IMPROVED MACHINERY INC.

NASHUA, NEW HAMPSHIRE

SHERBROOKE MACHINERIES LIMITED, SHERBROOKE, QUEBEC
Manufacture Similar Equipment in Canada

LINK-BELT announces MOTOGEARS and

MOTOGEARS

for bracket mounting NEMA foot-type motors of any manufacture . . . widest application flexibility . . . up to 60 hp

ABILITY TO ACCOMMODATE WIDE RANGE OF MOTORS solves emergencies, minimizes downtime.

EASY MOTOR REPLACEMENT is accomplished by removing four bolts and separating coupling—oil drainage is unnecessary. Motor bracket assures rapid realignment.

RIGIDITY of high speed shaft and pinion is provided by straddle-mounting—important in coping with shock, reversing and heavy loads.

STURDY BRACKET MOUNT is securely bolted to drive housing and provides rigid mounting for motor.

★ *Years-ahead design* — to harmonize with modern NEMA motors

★ *Stamina for the years ahead* — combining utmost compactness and highest efficiency for heavy-duty service

line of New, COMPACT GEARMOTORS...

GEARMOTORS

the ultimate in compactness . . . with flange-mounted NEMA motors . . . up to 30 hp

UTMOST COMPACTNESS is provided by flanged connection of motor to gear drive.

ONE-PIECE HOUSING cuts maintenance, offers added strength and assures oil-tight, quiet operation.

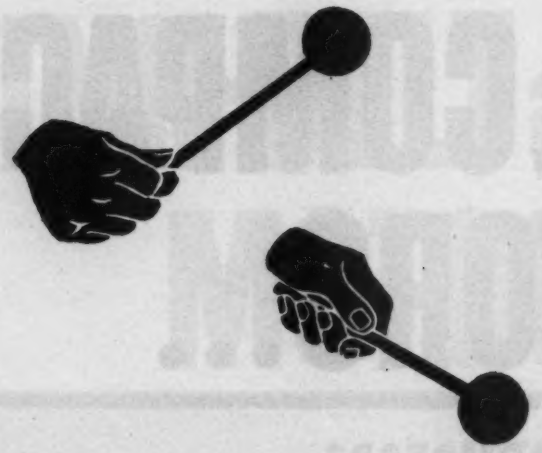
BUILT-IN ALIGNMENT of motor is provided through use of a rabbet-fit motor flange.

NEVER before has a speed reduction line offered this combination of features: *oil-tight design* having a minimum number of openings, each protected by an effective oil seal; *quiet operation* resulting from precision machining and noise-absorbing, cast iron housing; *standardization* with only one low-speed gear set per drive size; *compactness* derived from a unique gear arrangement; *integral backstop* with positive-locking action, which may be installed at any time. Learn all about these advanced new drives—ask your Link-Belt office or authorized stock-carrying distributor for Book 2447.

LINK-BELT

ENCLOSED DRIVES

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 13,807



You can't beat HAMILTON Felts . . .

for maximum profitable tonnage with least downtime!

You *can* beat high downtime costs with long-life Hamilton Felts. Attention to detail makes the difference—brings you a complete choice of felts to fit your requirements, your machines . . . and reduce adjustment requirements to the minimum.

Hamilton Felts

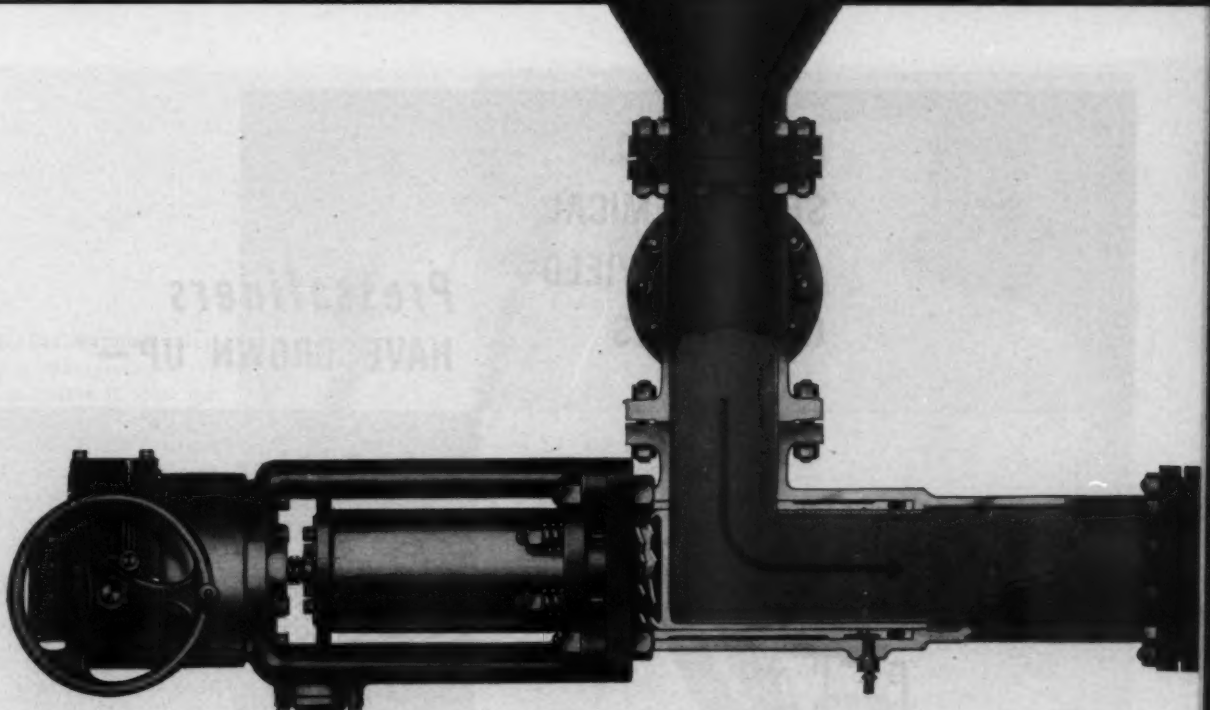
MIAMI WOOLEN MILLS
Established 1858

HAM FELTZ says:

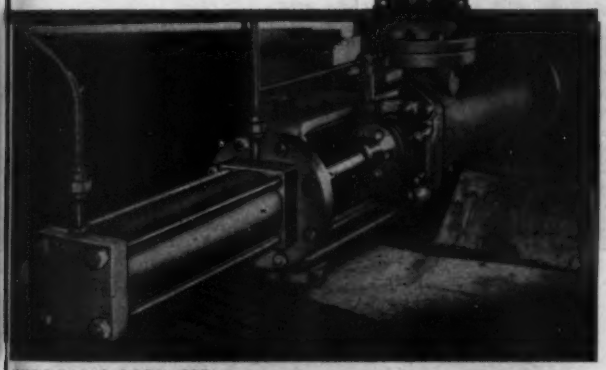
"Proper felt selection assures reduced drier-roll requirements—reduced steam costs—longest effective performance between felt changes!"

Ask your Hamilton Felt Service Salesman how to beat downtime. His experience is available without cost or obligation.

SHULER & BENNINGHOFEN, HAMILTON, OHIO



full, free digester discharge



HYDRAULIC-OPERATED Yarway Digester Blow Valve—one of six installed at large North Carolina paper mill.

MOTOR-OPERATED Yarway Digester Blow Valve—one of eight installed at large Canadian paper mill.

Digesters blow fast and clean with YARWAY Seatless Blow Valves.

The hollow sliding plunger of the valve has no pockets where wood chips or tramp materials can hang up.

Full pipe area permits fast discharge with minimum pressure drop.

Scores of pulp mills report *lower operating costs* and *increased production* due to YARWAY Digester Blow Valves. One large mill found *savings in operation and maintenance the first year more than paid the cost of their 4 new Digester Valves!*

YARWAY Seatless Digester Valves can be furnished either with electric motor or hydraulic cylinder units. Both are remote controlled. Bulletin B-441 gives the whole story. Write for it.

YARNALL-WARING COMPANY

149 Mermaid Avenue, Philadelphia 19, Pa.

BRANCH OFFICES IN PRINCIPAL CITIES

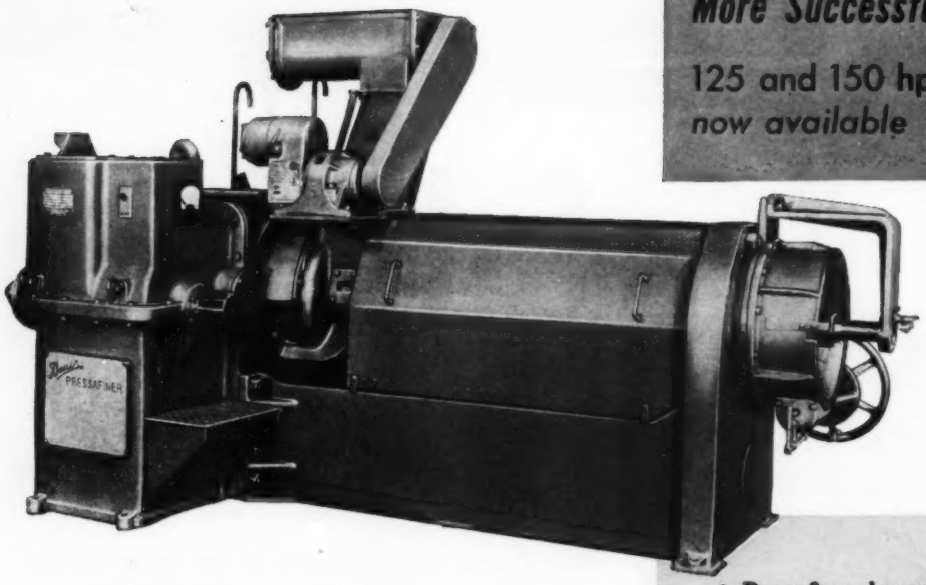
··DIGESTER BLOW VALVES

A BOON TO SEMI-CHEMICAL and HIGH YIELD OPERATIONS

Pressafiners HAVE GROWN UP—

New Features
Better Results
More Successful Installations

125 and 150 hp Models
now available



- Pressafiners have doubled in size and capacity since their introduction.
- Now 8½" diameter barrel is standard —giving better drainage, more capacity, and lower power inputs.
- Better pulp quality, improved end-product appearance, fewer shives, and lighter color, with less maintenance, are results of using Bauer Pressafiners.
- By expressing cooking liquors in highly concentrated form, stream pollution problems can be solved.
- Pressafiners have saved up to 50% of disc mill refining power. Power saving gives added capacity in refiners.
- More than fifteen Pressafiners have proved their worth in highly successful commercial installations.

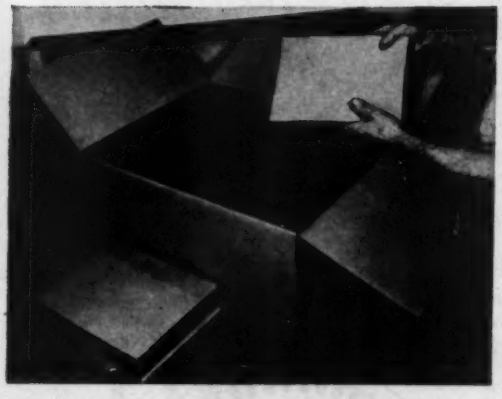
The excellent co-operation of Green Bay Paper & Pulp Co. has made the development of this machine possible, giving the industry higher quality end-products at lower costs. For more details, contact us.

Bauer

THE BAUER BROS. CO.
DISC REFINER HEADQUARTERS
1759 SHERIDAN AVE. • SPRINGFIELD, OHIO

REPELLENT WADDING—The unique characteristics of Aquapel make it ideal for sizing grades like cellulosic cushioning materials, which have formerly presented difficult problems. A new concept in sizing, Aquapel reacts chemically with cellulose fibers to form a surface that is resistant to the penetration of water, acid, and alkali.

AQUAPEL® SOLVES THE TOUGHEST SIZING PROBLEMS



JUTE LINERS—Efficient sizing of alkaline jute liners for corrugated boxes has always been difficult to obtain. Now Aquapel makes it easy without sacrificing strength. A small amount of Aquapel provides a degree of resistance to moisture that keeps boxes looking better longer.

Impossible to size? If you haven't tried Aquapel, you haven't tried the new concept in sizing that makes the difficult look easy.

There are many good reasons for the Aquapel difference. To begin with, Aquapel is not just "another sizing agent." Neither resin nor wax, Aquapel is a chemical compound that becomes an integral part of the fiber. It is never just "stuck on."

Applied on the surface, Aquapel is also a lot more than a surface size in the usual sense. Any equipment commonly used for the surface treatment of paper can be used to apply Aquapel. And it takes only a little Aquapel to make a big difference.

If you haven't tried Aquapel, write Hercules for a sample and descriptive literature.

Paper Makers Chemical Department

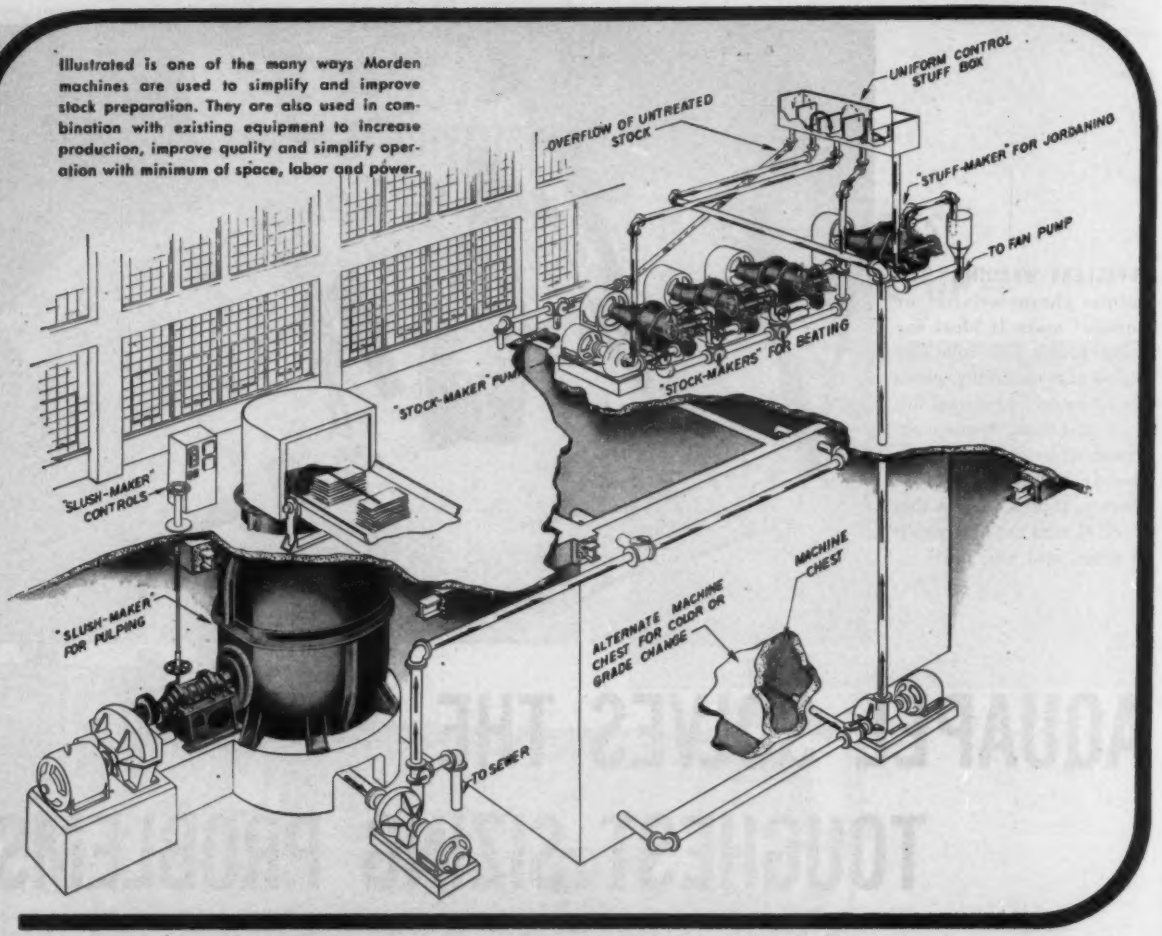
HERCULES POWDER COMPANY

INCORPORATED

961 King Street, Wilmington 99, Del.

PP56-2

AQUAPEL®
makes the difference

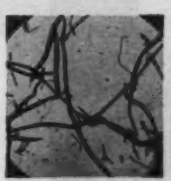

Illustrated is one of the many ways Morden machines are used to simplify and improve stock preparation. They are also used in combination with existing equipment to increase production, improve quality and simplify operation with minimum of space, labor and power.
UNIFORM CONTROL STUFF BOX
OVERFLOW OF UNTREATED STOCK
"STUFF-MAKER" FOR JORDANING
TO FAN PUMP
"STOCK-MAKERS" FOR BEATING
"STOCK-MAKER" PUMP
"SLUSH-MAKER" CONTROLS
MACHINE CHEST
ALTERNATE MACHINE CHEST FOR COLOR OR GRADE CHANGE
"SLUSH-MAKER" FOR PULPING
TO SEWER

The MORDEN System of Stock Preparation

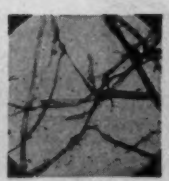
Morden offers three basic machines—each proven to excel in one of the three fundamentals of stock preparation—pulping, beating and jordaning. Each machine is precisely engineered, and permits full range of treatment on a continuous production line operation.

Morden's years of experience with hundreds of installations throughout the world can provide the "know-how" to assist mills in adapting existing systems or developing new systems of stock preparation to best serve individual requirements.

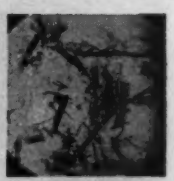
Ask Morden for more detailed information or assistance and how this equipment can be used advantageously in *your* mill.



PULPING
Separating one fiber from the other in preparation for treatment.



BEATING
Brushing or fibrillating, with emphasis on retention of fiber length for strength.



JORDANING
Shortening or cutting for formation and final control (if required).

To Mordenize . . . Use

MORDEN SLUSH-MAKER FOR PULPING
MORDEN STOCK-MAKER FOR BEATING
MORDEN STUFF-MAKER FOR JORDANING

MORDEN
STOCK PREPARATION EQUIPMENT
MACHINES COMPANY
3420 S. W. MACADAM
PORTLAND OREGON

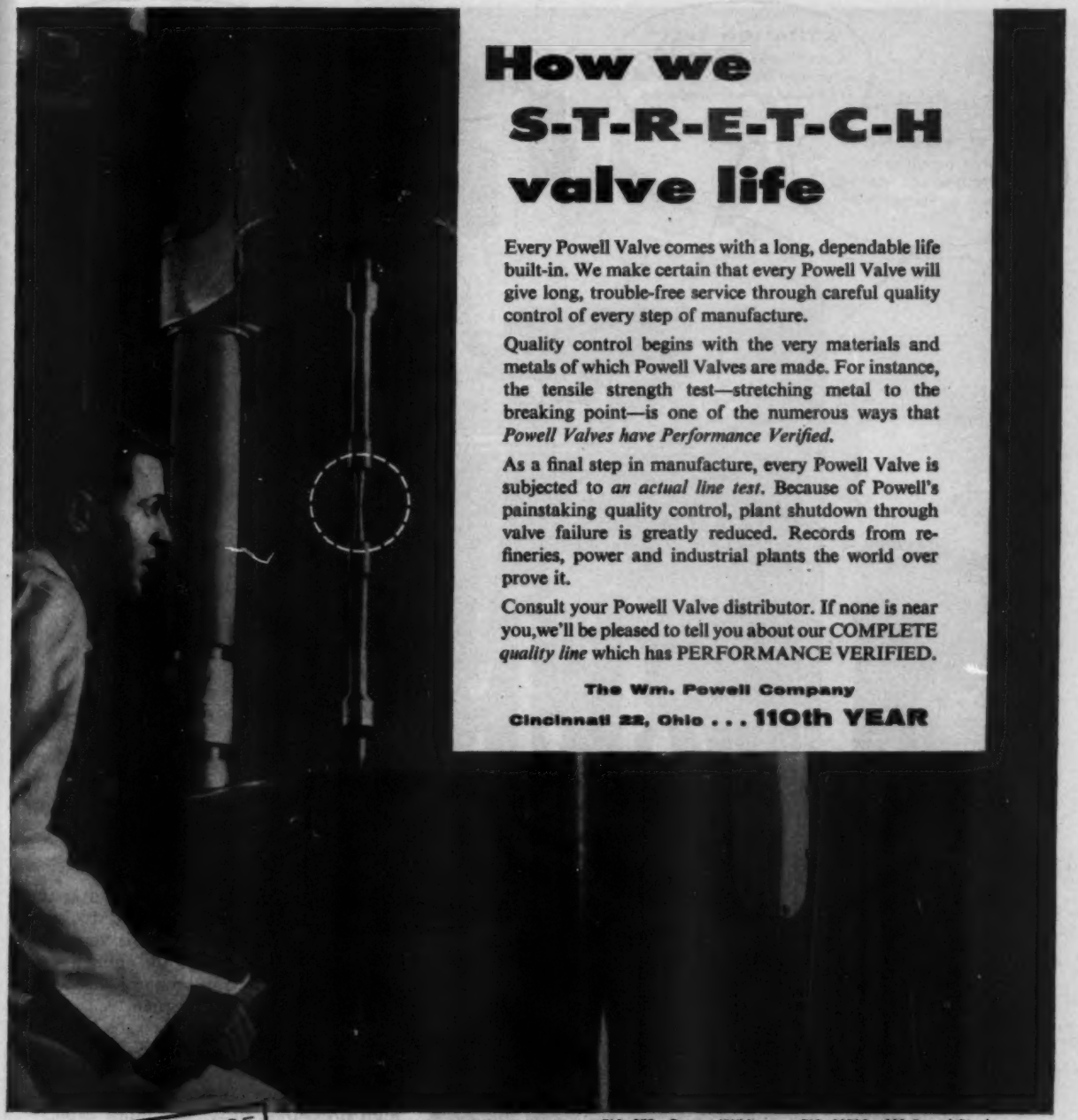
Representatives:

Northeastern States:
ORTON CORPORATION, Fitchburg, Mass.

Midwestern States:
DAN B. CHAPMAN, Appleton, Wisconsin

Southern and Southeastern States:
BRANDON SALES, INC., Greenville, S. C.

Other Representatives in Most Paper-making Countries



How we S-T-R-E-T-C-H valve life

Every Powell Valve comes with a long, dependable life built-in. We make certain that every Powell Valve will give long, trouble-free service through careful quality control of every step of manufacture.

Quality control begins with the very materials and metals of which Powell Valves are made. For instance, the tensile strength test—stretching metal to the breaking point—is one of the numerous ways that *Powell Valves have Performance Verified.*

As a final step in manufacture, every Powell Valve is subjected to *an actual line test.* Because of Powell's painstaking quality control, plant shutdown through valve failure is greatly reduced. Records from refineries, power and industrial plants the world over prove it.

Consult your Powell Valve distributor. If none is near you, we'll be pleased to tell you about our COMPLETE *quality line* which has PERFORMANCE VERIFIED.

The Wm. Powell Company

Cincinnati 22, Ohio . . . 110th YEAR

PERFORMANCE PV VERIFIED

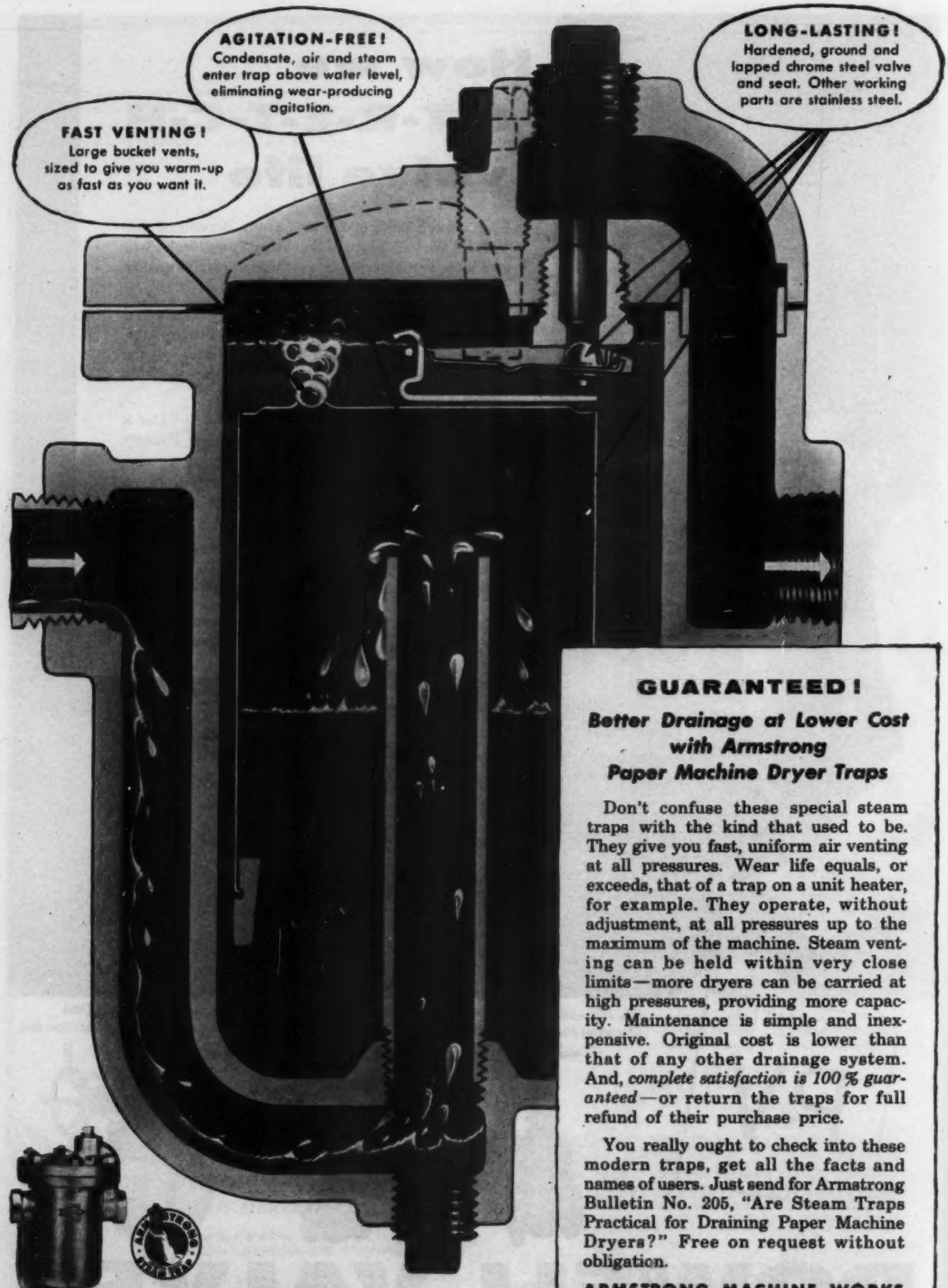
FIG. 1893—Alloy Cast Iron O.S.&Y. Gate Valve For 200 Pounds W.O.G.

FIG. 375—Bronze "White Star" Gate Valve For 200 Pounds W.S.P.

FIG. 3059G—300-Pound Steel Lubricated Plug Valve. Gear Operated. Sizes 6" to 12".

POWELL VALVES

BRONZE, IRON, STEEL AND CORROSION RESISTANT VALVES.


AGITATION-FREE!
Condensate, air and steam enter trap above water level, eliminating wear-producing agitation.
FAST VENTING!
Large bucket vents, sized to give you warm-up as fast as you want it.
LONG-LASTING!
Hardened, ground and lapped chrome steel valve and seat. Other working parts are stainless steel.

GUARANTEED!

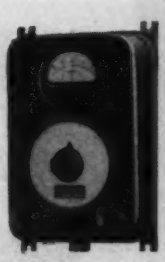
Better Drainage at Lower Cost with Armstrong Paper Machine Dryer Traps

Don't confuse these special steam traps with the kind that used to be. They give you fast, uniform air venting at all pressures. Wear life equals, or exceeds, that of a trap on a unit heater, for example. They operate, without adjustment, at all pressures up to the maximum of the machine. Steam venting can be held within very close limits—more dryers can be carried at high pressures, providing more capacity. Maintenance is simple and inexpensive. Original cost is lower than that of any other drainage system. And, *complete satisfaction is 100% guaranteed*—or return the traps for full refund of their purchase price.

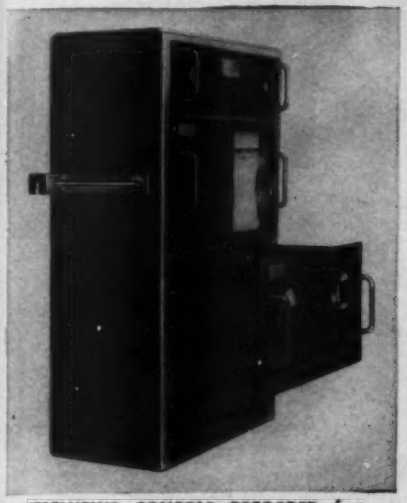
You really ought to check into these modern traps, get all the facts and names of users. Just send for Armstrong Bulletin No. 205, "Are Steam Traps Practical for Draining Paper Machine Dryers?" Free on request without obligation.

ARMSTRONG MACHINE WORKS
816 Hoffman St., Three Rivers, Michigan

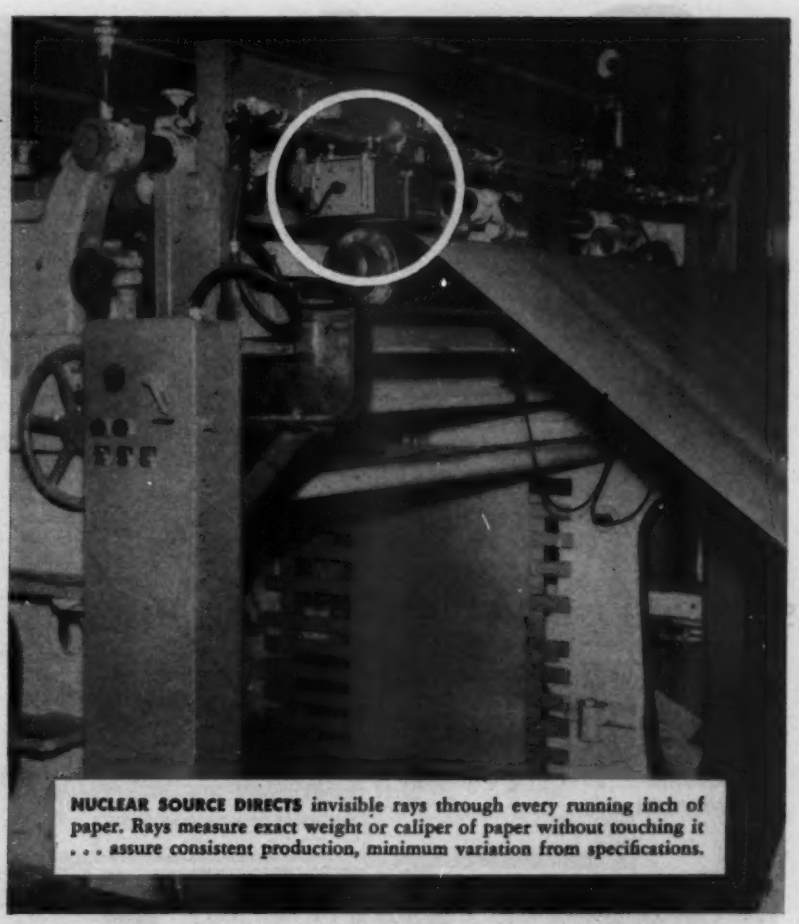
ARMSTRONG
PAPER MACHINE DRYER TRAPS



MACHINE TENDER adjusts target selector to proper weight specification for each order. Selector acts as constant guide for tender stationed at wet end.

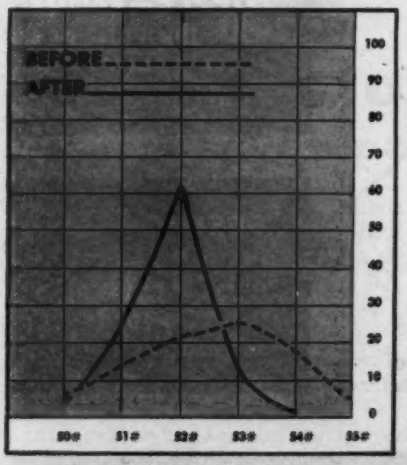


EXCLUSIVE CONSOLE RECORDER features drawer-type construction for easy maintenance. Continuous recorder charts weight of paper during production, provides permanent record.



NUCLEAR SOURCE DIRECTS invisible rays through every running inch of paper. Rays measure exact weight or caliper of paper without touching it . . . assure consistent production, minimum variation from specifications.

NOW... HUG WEIGHT SPECIFICATIONS with Curtiss-Wright Control Systems



BEFORE, when hand-weighed test sheets were used for control, variation was excessive. After installing Curtiss-Wright system, uniformity sharply increased.

Field-proven Curtiss-Wright Basis Weight Control Systems monitor paper weight continuously, record actual production quality, warn immediately if variations occur—even trigger stuff gate controls. The result is roll after roll of on-weight paper, with important savings in production time, pulp and down-grading losses. Order changes can be made faster, and cross-sheet variation reduced as much as 50%. The large choice of mounting designs permits an installation tailored to your space requirements and budget. *For complete details, write Industrial Controls Dept., Curtiss-Wright Electronics Division, Carlstadt, N. J.*

WEST COAST REPRESENTATIVE:
Western Dynamics Co., 444 Dexter Horton Bldg., Seattle 4, Wash.

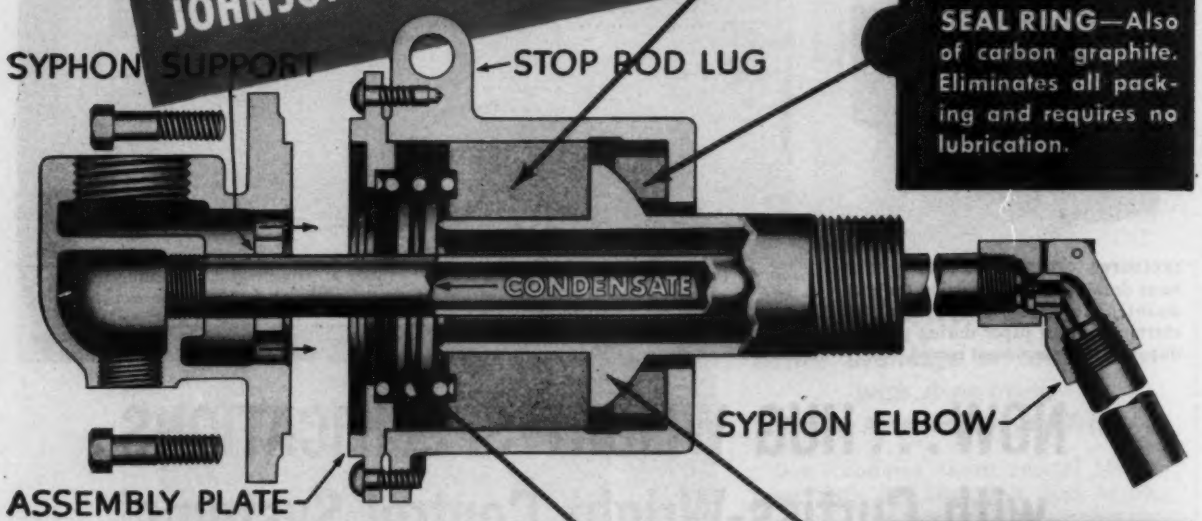
CANADIAN REPRESENTATIVE:
Electronics Associates, Ltd., 4616 Yonge St., Willowdale, Ont.

Systems Friesoke & Hoepfner

ELECTRONICS DIVISION
CURTISS-WRIGHT
CORPORATION • CARLSTADT, N. J.

Only 4 INTERNAL PARTS!

TYPE SBP
JOHNSON JOINT and JOHNSON SYPHON ELBOW



GUIDE—Makes the joint self-supporting. It is of self-lubricating, long-wearing carbon-graphite.

SEAL RING—Also of carbon graphite. Eliminates all packing and requires no lubrication.

NIPPLE—Rotates with the roll, and seals against the ring.

SPRING—Serves for initial seating only. In operation joint is pressure sealed.

Notice how straightforward and simple is the design of this Johnson Joint. This unmatched simplicity means fewer breeding places for trouble... simplifies overhaul and repair out in the field. At the same time the joint is completely packless, self-adjusting, self-lubricating and self-supporting.

In this Type SBP the assembly plate holds the internal parts in position when head is removed. This makes it a perfect team-mate for the Johnson Syphon Elbow which can be inserted or withdrawn right through the joint.

Test it yourself—We'll gladly supply a pair of the units shown for 90 day trial right in your own mill; no obligation of course. Write for details and literature.

Products of The

845 WOOD ST., THREE RIVERS, MICH.

Rotary Pressure Joints • Compressed Air Separators and Aftercoolers
Direct Operated Solenoid Valves • "Instant" Steam Water Heaters

Easy operation of the machine is made possible by grouping controls on this convenient panel. Machine handles rolls up to 60 in. dia. and 4000 lb. weight. Here high-quality Hamilton papers are slit at 3000 fpm.

Langston Slitter & Winder

saves paper company $150 daily

"The automatic roll ejector feature alone is saving us around $4000 a year." This remark was made recently by C. M. Connor, manufacturing vice president of W. C. Hamilton & Sons, paper-makers of Miquon, Pa., just outside of Philadelphia, in reference to the new 115 in. Langston Slitter & Winder installed at the plant.

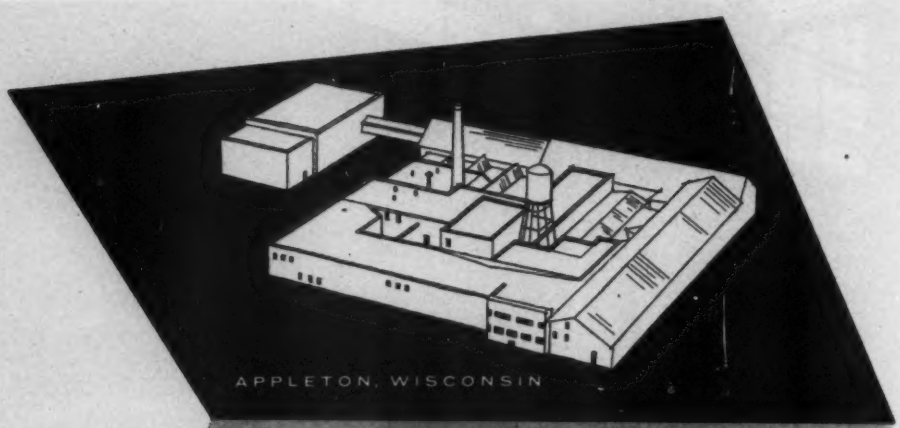
"In fact," continued Mr. Connor, "we expect the machine will pay for itself early next year, just from the savings it makes possible."

Instead of needing a crew of men to remove each roll from the machine by hand-operated hoists, now one man can do it by operating simple controls. Higher rewinding speeds have helped Hamilton step up production 10%. Better control of sheet has cut waste 3% and eliminated wrinkling.

Hamilton finds that the Langston shear-cut slitters make clean, sharp edges on all rolls and keep paper dust to a minimum. An automatic brake stops the roll quickly at the end of a wind, helps maintain proper paper tension.

Langston Slitters & Winders are available in sizes to 196 in. wide and 72 in. dia. Speeds to 4000 fpm and beyond. Find out how much you can save. Write SAMUEL M. LANGSTON CO., CAMDEN, 4, N. J.

LANGSTON leadership by design



APPLETON, WISCONSIN

Confidence....in the paper industry

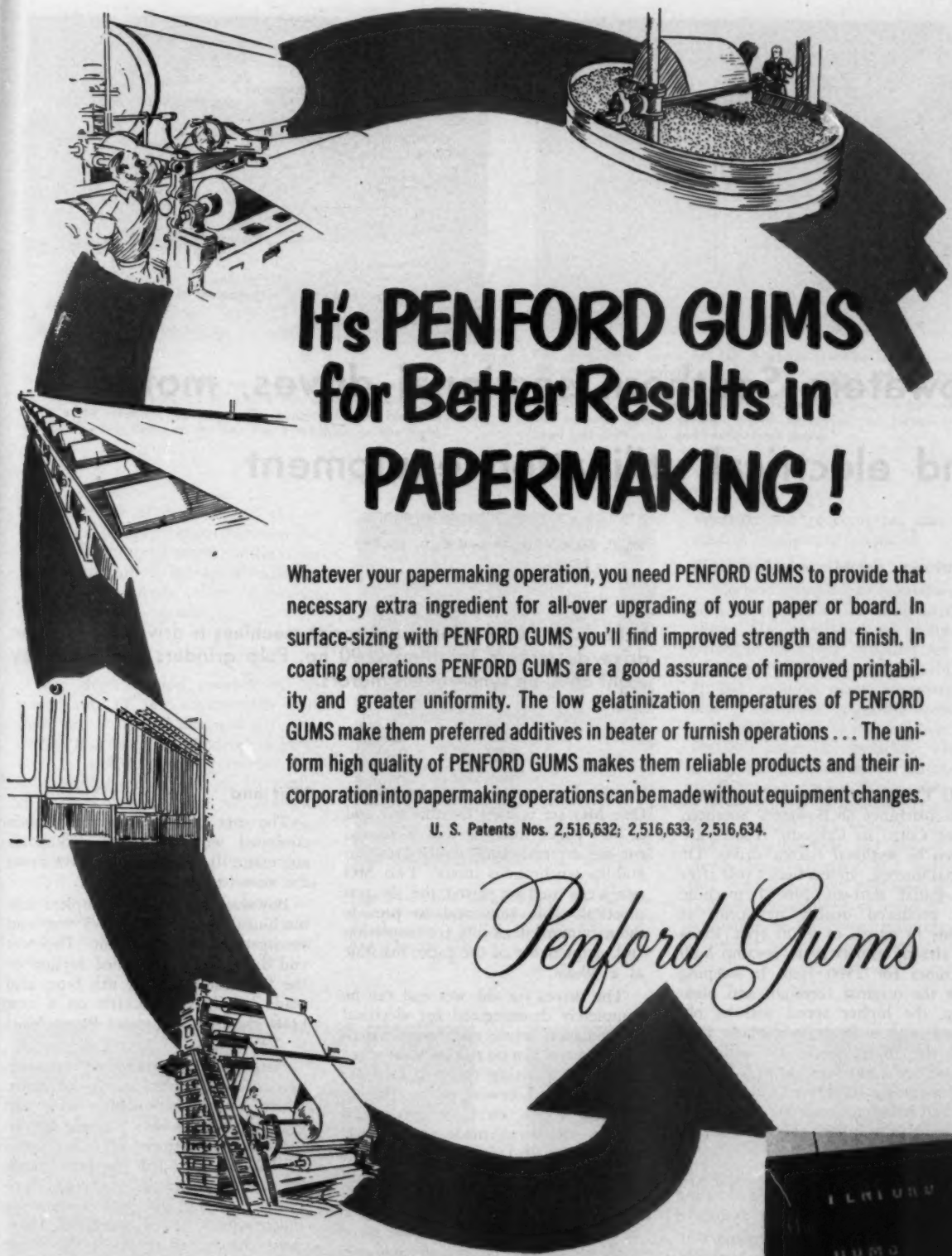
Foresight.....to anticipate changing conditions and requirements of the paper industry with new manufacturing facilities

MONTGOMERY, ALABAMA
IN PRODUCTION SINCE OCTOBER, 1954

Appleton Wires are Good Wires

Appleton Wire Works, Inc.
GENERAL OFFICES, APPLETON, WISCONSIN

INTERNATIONAL WIRE WORKS, MENASHA, WISCONSIN . . . AN AFFILIATED COMPANY SINCE JANUARY, 1955

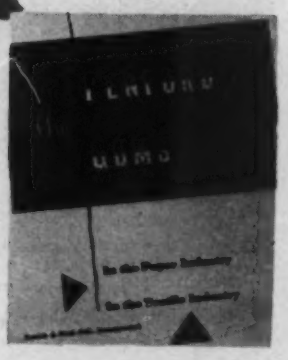


It's PENFORD GUMS for Better Results in PAPERMAKING !

Whatever your papermaking operation, you need PENFORD GUMS to provide that necessary extra ingredient for all-over upgrading of your paper or board. In surface-sizing with PENFORD GUMS you'll find improved strength and finish. In coating operations PENFORD GUMS are a good assurance of improved printability and greater uniformity. The low gelatinization temperatures of PENFORD GUMS make them preferred additives in beater or furnish operations . . . The uniform high quality of PENFORD GUMS makes them reliable products and their incorporation into papermaking operations can be made without equipment changes.

U. S. Patents Nos. 2,516,632; 2,516,633; 2,516,634.

Penford Gums



To get better results in your final paper or board product, it will pay you to investigate PENFORD GUMS. PENICK & FORD, LTD., Inc., 420 Lexington Avenue, New York 17, N. Y.; 806 Bona Allen Building, Georgia; Cedar Rapids, Iowa.

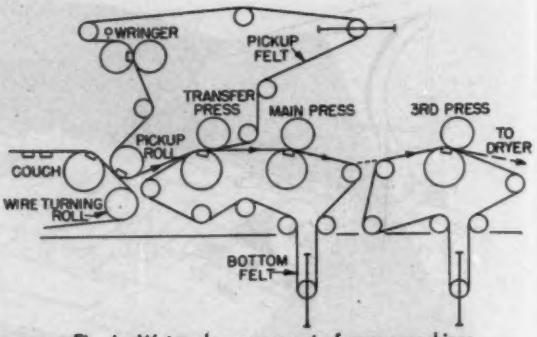


Fig. 1—Wet end arrangement of paper machines

Bowaters Southern sectional drives, motors and electrical utilization equipment

W. C. BLOOMQUIST* and C. D. BECK**

Each of the two Beloit newsprint machines is driven by 17 main drive dc motors totalling 2090 hp. Pulp grinders are driven by eight 5400-hp synchronous motors.

THE TWO 2000-fpm, 252-in. newsprint machines at Bowaters Southern Paper Corp. in Calhoun, Tenn., are driven by sectional electric drives. Of special interest, in less than a year after the initial start-up, No. 1 machine had produced quality newsprint at speeds in excess of 2100 fpm. Plans are already underway to revamp both machines for 2500 fpm. In keeping with the original foresight and planning, the higher speed will be obtained with a lesser investment than had the drives been originally designed for 2500 fpm. This is because the operating conditions can be more accurately defined and because of the inherent flexibility of the electric drive.

Each machine is presently driven by 17 main drive dc motors totaling 2090 hp. Power for these motors is supplied by seven dc generators controlled by amplidyne and electronic-amplidyne regulators. The controlled variables are torque, speed, and sheet tension. All motors except those for the dryer section are rated 550 volts. One MG set is used for the wet end of the paper machine and a second for the dry end. Each is driven by an 800-hp synchronous motor. Two MG sets were used to permit the shortest practical cable runs and to provide the maximum flexibility for inspection and maintenance of the paper machine as a whole.

The drives for the wet end can be completely de-energized for electrical maintenance, while the dryers, calender, and reel can be run on slow speed or at any operating speed to facilitate maintenance. Likewise, when clothing changes (felts, etc.) or mechanical repairs are being made on the wet end, all dry end drives can be taken out of service for electrical repairs or inspection. Provision is also included for jogging or operating any section of the paper machine at slow speed with all of the electronic regulators taken out of service for testing or repair. It is expected that this machine flexibility will materially reduce machine outage time through the use of an effective maintenance program utilizing to the fullest extent the entire mill crew.

*Manager application engineering, General Electric Co.
**General mill engineering, General Electric Co.

Wet end

The wet end of the machine is equipped with a suction pickup to automatically transfer the sheet from the wire to the press, Fig. 1.

Bowaters has the first complete new machines to use this novel wet end arrangement on newsprint. The wet end drives are a simplified version of the first installation of this type, also made by General Electric on a new kraft machine at Crosset Paper Mills in 1950.

Nine motors drive and maintain precise speed control of the key rolls, which essentially combine wire and two felt sections into a single operating unit. Adjustment of either speed or load is provided for each motor to give the greatest operating flexibility. The felt and wire sections are independently speed regulated. However, changes in speed of the entire wet end unit can be made from a single operator's draw rheostat.

Electronic differential speed relays monitor the speed difference or draw between the felt and wire sections. This relay prevents the suction pickup roll from being lowered into contact

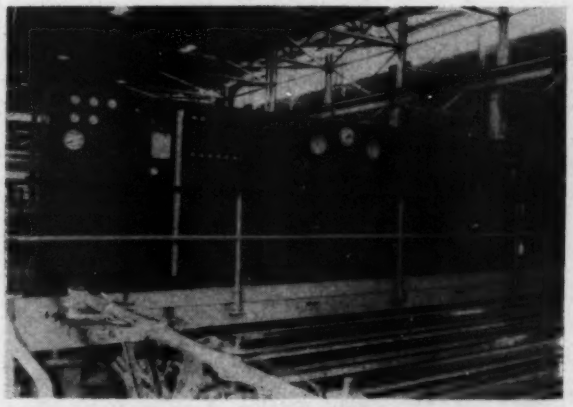


Fig. 2—The process controls for both paper machines are on this control bridge located 10 ft. above the operating aisle and adjacent to the machine headboxes. The controls for the No. 1 machine are on the left half and for the No. 2 machine on the right

Fig. 4—Control room for No. 2 paper machine includes 750 kva, 480 volt unit substations; main control panels and wet end MG set for sectional paper machine drive; 440 volt motor control centers; 2,300 volt Limitamp starters; metallic exciters for synchronous motors; speed variator power units for the paper machine head box distributor and rectifier roll drives

with the wire if more than a pre-set difference in speed exists between the two sections, and it automatically raises the pickup roll if the speed differential changes more than a pre-set amount for any reason.

Dryer section

The dryer section consists of 55 paper and 11 felt dryers with four indriving shafts all mechanically connected together. Each indrive is powered by a 200-hp, 230-v motor. The four motors are connected electrically in a series looped with two 300-kw, 500-v dc generators. A single regulator controls the dryer speed by simultaneous control of both generators. This arrangement assures an even distribution of load among the four motors under all operating conditions without attention from the operator and reduces the amount of control equipment required.

Fig. 3—Control bench boards for the No. 2 paper machine and drive controls. The left bench board is for the calender. The right one is for the reel

Electronic-amplidyne regulators

Electronic-amplidyne regulators control the speed of the individual sections. The regulators are similar in principle to others supplied for over 135 paper machines since World War II but include many improvements and refinements resulting from the accumulated experience of over 20,000,000 hours of operation. The accuracy has been increased, adjustment made easier, maintenance simplified and reliability improved. The regulators control roll speed at the wet end of the machine and provide high steady state accuracy and extremely fast response. Fast response is particularly desirable for optimum performance of the wire section, which is subject to fluctuating load changes.

Fig. 5—Driver motor and control room. Operator's control station exciter MG set for No. 8 grinder in right foreground. Switchgear for 3000-kva double ended master unit station at extreme right

Fig. 6—These three 1000-hp, 3600-rpm induction motors drive boiler feed pumps

TABLE I
2300 VOLT MOTORS

Service	Number of Motors	HP	RPM	Type	P.F.
STATION SERVICE					
Boiler Feed Pump	3	1000	3600	Ind.	
I.D. Fan (Recovery boiler)	1	350	900	Ind.	
I.D. Fan (Bark boiler)	1	300	900	Ind.	
I. D. Fan (Power boiler)	2	300	900	Ind.	
RAW WATER PUMP HOUSE					
Pumps	4	350	1200	Ind.	
PAPER MACHINE NO. 1 & 2					
MG Sets	4	800	1200	Syn.	0.8
Vacuum Pumps	8	400	180	Syn.	1.0
Vacuum Pump	2	200	180	Syn.	1.0
Fan Pump	2	350	600	Syn.	1.0
Fan Pump (Spare)	1	350	600	Syn.	1.0
STOCK PREP.-GROUNDWOOD					
Disk Refiners	3	450	900	Syn.	1.0
STOCK PREP.-KRAFT					
Jordans	5	300	450	Syn.	1.0
Disk Refiner	1	450	900	Syn.	1.0
Total	37	5600			

(One 450 horsepower stock prep. motor and one 400 horsepower chipper motor are rated 440 volts)

Improved slow speed, jog reverse, and accelerating characteristics are provided on the individual section drives. This provides softer starts and smoother acceleration. The accelerating time is adjustable over a wide range to give it the optimum accelerating characteristics for each section regardless of load inertia.

Slow speed is electronically regulated and may be adjusted to the extremely low values required to simplify spotting of the felts and wire. Fast stopping, particularly important on the large heavy inertia dryer section, is obtained by regenerative breaking.

Differential speed indicators

Differential speed indicators, calibrated directly in fpm, continuously indicate the draw between the wire and the transfer press and between the transfer and the main press. Speed differential or draw between sections, particularly at the wet end of the machine, is a quantity in which production and operating people are always vitally interested. It is a quantity paper makers always talk about but seldom know its exact value. These differential speed indicators provide the mill supervisor personnel with a number which permits them to keep track of what the machine and the operators are doing; indirectly, it may tell what the stock conditions are. Electrically, it is unique because it performs a job which is difficult to do with conventional instruments because of accuracy limitations.

Tension control

Tension control, as well as speed control, is provided for the dry end sections. Actual sheet tension is controlled between the calender and the dryer by a GE paper tensiometer. Conventionally in the past, constant ratio drives have been used between the various sections of the paper machine. Experience has proved that this is not the best way to drive the dry end sections of a machine for optimum quality and maximum production. It is a well established fact that paper is quite unstable dimensionally. Even a piece of seasoned high quality chart paper can vary 0.1 per cent with temperature and humidity. On the paper machine the situation is much worse because of the great number of variables which enter into the process. A fixed ratio drive does not compensate for these variables. As a result, quality sometimes suffers and calender cuts or breaks are often more prevalent. A tension-regulating drive will cause the section speed to automatically follow these variations in the sheet and maintain actual sheet tension even under extreme conditions of paper grade changes.

This is quite apparent on the Bowaters machines. Once the sheet is secured in the calender, practically no attention or adjustment of the draw is required regardless of changes in stock freeness, shrinkage, loading on the calender, or tension changes in the sheet leaving the calender.

Over-all machine speed

Over-all machine speed is set from a single rheostat located on the control bridge and electronically controlled. This machine speed control system is more reliable, has greater flexibility, better accuracy, and surpasses considerably the performance of previous units. The operators' dial is a 25-ton rheostat for precise setting of machine speed and for fine resolution for making small speed changes accurately. The speed change is smooth and stepless. There is no backlash. The resultant speed is exactly the same for any rheostat setting whether the operator plans to dial clockwise or counter-clockwise. The timing of the speed change can be set from 2 min. to 20 min. for 100 per cent speed change.

Grinder motors

Eight 4500-hp, 340-rpm, 4000-v, 1.0-PF sychronous motors drive the pulp grinders. Each motor is direct coupled to a single pulp stone, 67 in. in diameter by 69 in. long, capable of grinding two cords of 5-ft. wood per hour. The motors, associated switchgear, and auxiliary electric equipment are located in a separate room adjacent to the grinder room, Fig. 5. The drive shafts extend through the wall to the grinders.

The motors start on full voltage from a 30,000-kva double ended master unit substation supplied from the 13.8-kv mill bus. The motors are totally enclosed, self-ventilated and equipped with water-to-air surface coolers. Sufficient rotor end play is provided to isolate the coupling thrust from the motor bearings.

The water-to-air coolers are located in individual pits directly below each motor. This construction was selected because the cooling and ventilating requirements of the grinder motor and switchgear room could be sub-

TABLE II
DISTRIBUTION OF
440 VOLT AC MOTORS

Mill Area	Number of Motors	Installed Hp
Bleach Liquor Making	9	73
Bleach Plant	40	1165
Boiler Room	41	1140
Causticizing	37	325
Chem. Handling	1	15
Digester	11	188
Evaporator	12	84
Finishing Room	14	120
Grinder Room	34	1350
Lime Reburning	23	264
Process & Sanitation	10	242
Pulp Dryer	86	1292
No. 1 Machine	118	2264
No. 2 Machine	100	2016
Raw Water Supply	2	2
Recovery	43	883
Screen Room	28	997
Shops & Stores	67	411
Storage & Ship.	13	114
Stock Prep.	125	3228
Turbine Room	16	375
Washer Room	35	950
Water Treatment	37	305
Wood Prep.	84	2647
Yard & Plat.	4	135
TOTAL	990	20585

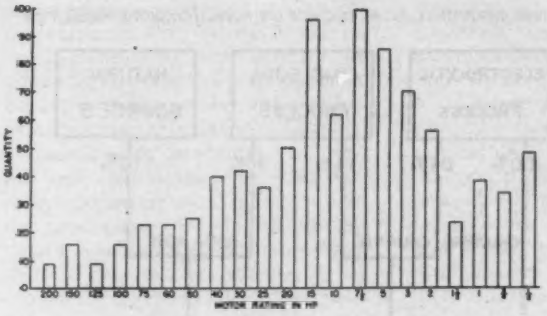


Fig. 7—Number of 440-v ac induction motors by horsepower rating

stantially reduced, permitting a considerable saving in first cost. Rotor fans draw air from the pit through the motor end shields and discharge it through the coolers back into the pit. This reduces motor maintenance because it retards the accumulation of dust and dirt and minimizes corrosion in the sulfur-laden kraft atmosphere and because the same cooling air is continuously recirculated.

Each motor is direct coupled to a grinder through a long shaft (four are 15 ft. long, and four are 30 ft. long) and one conventional gear type coupling. With this type of coupling it is possible to transmit considerable thrust to the motor shaft as a result of temperature changes and unavoidable misalignment. Consequently, since the grinder bearings were designed for a million pounds thrust to restrain the stone, sufficient endwise movement has been provided for the motor rotor to prevent the shaft from transmitting thrust to the motor bearings regardless of the sliding friction or position of the coupling.

Jordan motors

The jordan refiners are driven by 300-hp sychronous motors and equipped with load-sensitive plug adjusting regulators. The hydrating or combing action on the paper stock passing through the jordan is determined by the clearance between the conical shell and the conical plug which rotates within the shell. The power requirement of the jordan is also affected by this same clearance, and the refining effect is adjusted by moving the plug in or out axially with relation to the shell. The degree of refining is a function of power and time.

The first of these variables—power—is controlled by the refiner load regulator which automatically adjusts the position of the plug to maintain the set motor load. The plug is positioned by a small induction motor and a reversing starter which operates as a function of motor current. (On weak power systems—subject to voltage variations where current is not a good measure of power—"watt-sensitive" regulators are sometimes used).

The plug thrust is taken by the jordan bearings; however, the motors must be designed to accommodate the thrust which can be transmitted through the coupling to the motor. Unlike the grinders, thrust bearings were provided on the motors for this application because the jordan shaft must move axially several inches during the life of the plug. Because of the size of the motors and because the plug is subject to more frequent movement with automatic control, the motor bearings are designed for 1500-lb. continuous thrust in both directions.

The motors are equipped with sleeve bearings to carry the radial load and an outboard ball thrust bearing at the collector end to carry the thrust loading. This arrangement provides high thrust capacity, facilitates bearing replacement and simplifies rotor removal.

Boiler feed pump drives

The main boiler feed pump is coupled to a 1000-hp, 3600-rpm induction motor and 940-hp steam turbine. Two additional pumps, which are installed spares, are powered by identical 1000-hp motors. The turbine on the main pump functions as a reducing valve, primarily supplying 5-psi steam to the feedwater heaters. A back pressure regulator controls the flow of steam through the turbine, which determines the load the turbine can handle. The motor sets the speed of the pump and picks up load whenever the flow of steam drops below the power requirement of the pump. The turbine is arranged to automatically transfer from back pressure to speed governing if power is removed from the main pump motor.

The air discharge from the 1000 hp motors, Fig. 6, is from the top of the motor in an axial direction over the coupling and pump. With floor space at the premium, this permits the pumps to be located adjacent to one another, since it eliminates the problem of recirculating hot discharge air between units.

2,300-volt motors

A total of thirty-seven 2300-v motors are employed in the mill. Space heaters are installed in all of these motors and are automatically energized when the motors are shut down to keep the enclosure warm and the windings dry. The ratings and service are shown in Table I.

The station service (power, recovery, and bark boiler) motors have switchgear starters. All other 2,300-v motors have Limitamp* magnetic starters with air break contactors and current limiting fuses.

Sychronous motor excitation

Excitation for each of the grinder motors is supplied from individual 20-kw motor-generator sets. The individual rotating exciters were selected because they proved to be less costly, more flexible, and more reliable than any adequate bulk excitation system. Rotating exciters also permit adjustment of motor power factor from the exciter field rheostat with the motors running.

Twenty-five metallic rectifier ac/dc conversion units supply excitation to the 2300-v synchronous motors. The rectifiers range in size from 5- to 10-kw and supply excitation to motors up to 400-hp wherever frequent adjustment of the motor excitation is not essential. The rectifiers, together with short circuit protection and magnetic control, are combined in a single package. They are energized automatically when the synchronous motor is started and eliminate the need for an electrician to pre-start the exciters, as is usually done with MG sets as a safety precaution.

Table II shows the distribution of the low voltage motors throughout the mill. Fig. 7 shows the number of motors of each horsepower rating. Motor control centers are used for the maximum portion of the 440-v motor starters and lighting panels.

Current expansion program

The expansion program which is now underway will increase the mill's groundwood capacity by 75 per cent and increase the electric power generation by 125 per cent.

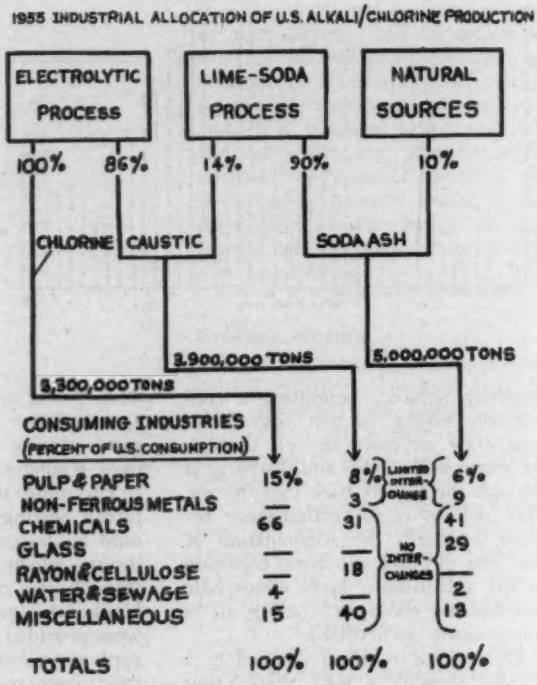
A third paper machine is being added. The new machine will be 276 in. wide and rated 2500 fpm—that is a 10 per cent increase in width and a 25 per cent increase in speed over the No. 1 and 2 machines.

Trends in the Production of Three Basic Chemicals

Figures in thousands of tons

Year	Caustic Soda	Chlorine	Soda Ash
1939	1,000	900	2,100
1944	1,900	1,300	4,100
1947	2,100	1,400	4,100
1950	2,500	2,100	3,800
1953	3,300	2,800	4,800
1955	3,900	3,300	5,000
1960 (est.)	4,300	4,100	5,800
1965 (est.)	5,000	4,800	6,700

Note: All figures, except the estimates, are based on information from the Dept. of Commerce.



Supply and demand of chlorine, caustic soda, soda ash

J. O. LOGAN*

ANY ANALYSIS OF the chlorine, caustic soda and soda ash picture will be clarified by an understanding of the inter-relation of these three chemicals, Fig. 1.

Although a small amount of chlorine is produced by non-electrolytic processes, for all practical purposes there is only one source of chlorine, namely, the electrolysis of salt brine. On the other hand, caustic soda is available from two sources, namely, the electrolytic process and the lime soda process. From the former process it is derived as a co-product with chlorine in a definite ratio of 1.1 lb. of caustic soda for each pound of chlorine. From the lime soda process, caustic can be obtained in varying proportions, although much of the equipment for the production of caustic soda by this process has already been dismantled.

Soda ash is available from two sources: the lime soda process producing approximately 90 per cent of the total production, and natural sources producing about 10 per cent of the total. A minor amount of the total soda ash production is now coming from the carbonation of by-product caustic soda.

It can be readily recognized that a decline of 10 per cent in the production of soda ash will represent about a 60 per cent increase in the availability of caustic soda from the lime soda process. Likewise, a reduction in the market demand for caustic soda can result in greater production of soda ash than would otherwise be possible. This interchange is somewhat limited by the fact that most producers have now discontinued production of lime-soda caustic, but there is still sufficient capacity available to utilize this flexibility of process to a substantial degree.

It is also interesting to note that the pulp and paper industry and the non-ferrous metals industry are consumers of both soda ash and caustic soda. Both consuming industries use soda ash to produce caustic soda for their processes via the lime soda technique. In both industries there is, therefore, a certain degree of interchange possible between these two alkalis so that a shortage of one can be compensated for by the use of more of the other and *vice versa*. This flexibility of interchange at both the origin and the consumption point for caustic soda and soda ash represents a "safety factor" not common to other chemical supplies. This factor in itself is considerable assurance to caustic and soda ash consumers that their requirements can be met by utilizing all possible flexibility in the supply and demand picture.

Production records

Chlorine production for 1955 is estimated at approximately 3,300,000 tons, exceeding the 1954 output by 19 per cent. During the period 1946 to 1955, inclusive, production increased almost 150 per cent. The official records of the Chlorine Institute, which represents the majority of chlorine producers in the United States, showed that chlorine electrolytic cell operation as a per cent of rated capacity started at 92.5 per cent in January 1955 and declined steadily through March, at which time it reached a level of 86.26 per cent. From then on, the trend was upward until in October of 1955 the rate was 103.1 per cent of rated capacity. Since October, the production has tapered off slightly, and whereas chlorine was extremely scarce in October, it is now somewhat more readily available.

Rated capacity and actual capacity are not synonymous terms. Practically every electrolytic chlorine plant is now capable of producing somewhat more tonnage than at the time of its original installation. This is due to improvements in technology

*General manager, Industrial Chemicals Div., Olin Mathieson Chemical Corp. Presented before the APPA Materials Committee, Feb. 21, 1956.

and operating controls, and 10 per cent capacity over rating is not beyond attainment. The industry capacity is now officially estimated to be 10,300 tons per day and production reached this rate in October.

Caustic soda production in 1955 reached approximately 4,000,000 tons, an increase of 55 per cent over the production in 1946. While this record is substantially less impressive than in the case of chlorine, it has fooled the "experts" who for years have been predicting an excess production of caustic soda beyond the ability of the market to absorb. Each succeeding year has given support to the view that market demand for caustic will be ample to sustain the chlorine production.

Soda ash production (finished form) reached almost 5,000,000 tons during 1955 and has shown approximately a 30 per cent growth since 1946. This is not a particularly impressive record, but we are now near the ceiling of presently installed ash capacity. In the area of balancing soda ash supply and demand, we could encounter some problems if unanticipated production difficulties should occur during 1956.

Factors affecting supply

An over-all factor affecting the availability of these three chemicals is the problem of labor disputes and work stoppages.

The multiplicity of suppliers and of plants from which shipments can reach any area makes it unlikely that local labor problems will cause shutdown of a consumer.

In the case of chlorine, several other guideposts can be used to predict the supply-and-demand balance. These factors change so frequently that it is impossible to prophesy for a year, but each supplier can watch for the signs and analyze the situation as it develops.

Chlorine cannot be stored in large quantities in relation to the rate at which it is produced. Therefore, chlorine plants are operated at a rate commensurate with the actual consumption of chlorine. At any given time, there is a relatively modest inventory in finished form. Fig. 1 shows that the principal consumption of chlorine is in a variety of chemical processes, such as the production of anti-freeze, insecticides, solvents and sterilizing agents. A warm winter, with its resultant lowered demand for permanent type anti-freeze, will release some chlorine for other uses but bear in mind that this is a long range effect, since the anti-freeze for next winter is already in the process of being manufactured. Heavy insect infestations will call for large consumption of chlorine for insecticide production, and this effect is more instantaneous. Any further expansion of titanium production, if by the Kroll process, will result in heavy demands for chlorine, and since this production would probably be at government insistence, there is no question that chlorine would be used for titanium production on a preferred basis.

Several factors which might improve the availability of chlorine over the long pull are non-electrolytic processes such as the generation from hydrochloric acid, which is now produced in great quantities as a by-product of numerous organic chlorination operations. In many chemical operations only a portion of the chlorine actually disappears in the product—it remains as a chlorinated by-product, often of limited utility and economic value. Any extensive recovery or recycling of these chlorine values would materially alter the supply and demand balance. Every decision to build a new chlorine unit is made only after facing up to this possible technological development. The direct oxidation process is tending to take the place of the chlorination process for the production of glycol anti-freeze, and hence in future years more chlorine productive capacity might be available for bleaching purposes. Basically, however, chlorine capacity is seldom installed until the use for the production is quite firm. Hence, there will seldom be excessive surplus chlorine capacity unless there is a general decline in business or some unforeseen technological changes.

The largest individual consumption of caustic soda is by the rayon and viscose process industry. This industry has been operating at a relatively high level, largely due to an increased proportion of the productive capacity being devoted to the production of staple fiber and the growth of cellophane. The rayon consumption for tire cord has reflected the high level of automobile production, and this may decline to the point where caustic demand from the rayon industry is less intense than it has been. For some time, the demand for soda ash has been stimulated by the non-ferrous metals industry (principally aluminum) and the glass industry. There is no sign that the rate of growth of the aluminum industry is coming to a halt. The glass industry has experienced an excellent level of business, both in the container and flat glass field. The high level of automobile production has again been a significant factor in glass operations.

All of the aforementioned factors will influence the availability of chlorine, caustic soda and soda ash. Purchasing people will do well to understand and keep posted on the status of these other consuming industries.

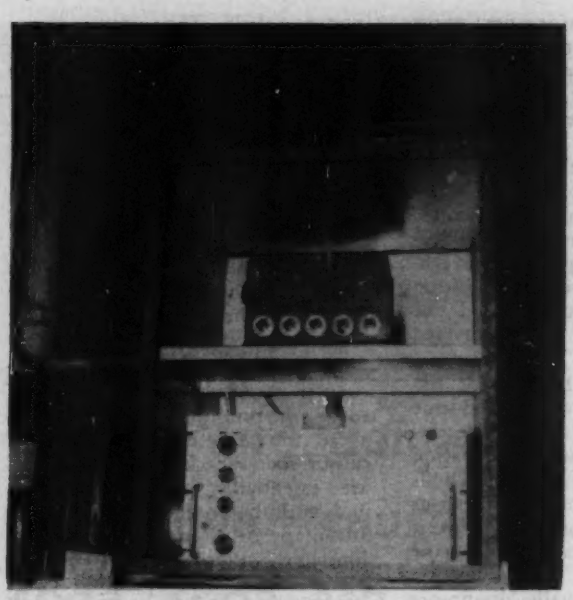
Actually, there should be more concern about the future growth of soda ash productive capacity than about the growth of chlorine and caustic soda capacity. Soda ash plants are essentially large-volume units and must be so located as to take advantage of cheap fuel and cheap limestone. Practically all of the plants currently in operation (with the exception of the newer natural recovery plant and some expansions of lime soda plants) were built prior to World War II and under substantially lower construction costs than prevail today. The soda ash industry will be confronted in the next two to three years with basic decisions on substantial expansions in order to meet the continuing demand for its product, and these decisions will not be easy ones.

New handling techniques

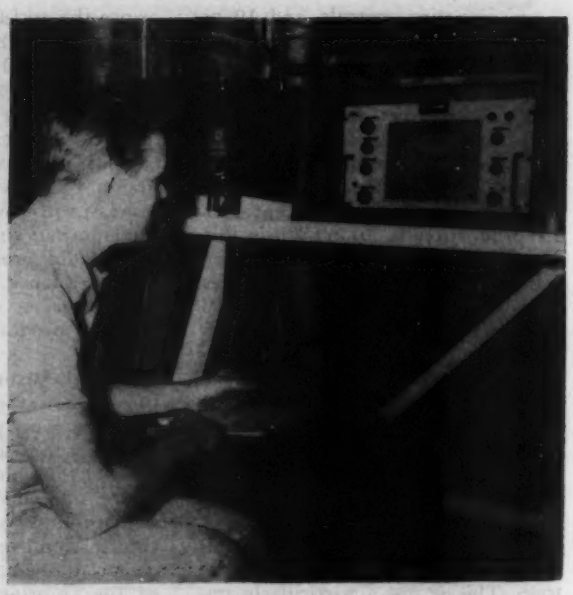
During the past year, there has been an expansion in the use of barges for the transportation of all three commodities under discussion. The continuous increase in rail freight rates has forced serious consideration of the lower transportation costs available from the use of water carriers. The problems associated with the barging of caustic soda and soda ash are not substantial, and an expansion of this type of transportation may be expected where the tonnage consumed and other circumstances justify it. The barging of chlorine presents a more complicated situation and requires large volume consumption at a fairly uniform rate in order to be economically practical.

The expanding use of soda ash in pulping processes has stimulated further development of the slurry storage technique, which is attractive from the standpoint of installation and handling costs where the tonnage consumed is substantial. Further developments of this type will doubtless appear from time to time.

(Continued on page 1129)



Compact "TV Eye" camera is installed in pulp washing room



Operator views pulp washing process on monitor installed two stories below washing operation

Schweitzer paper mill installs closed-circuit TV

S. P. GERBER

PROBABLY THE FIRST industrial television installation to be made in the state of New Jersey is the one recently completed in the Spotswood mill of Peter J. Schweitzer Inc., one of the nation's largest producers of cigarette papers.

This "TV Eye" closed-circuit system is doing more than merely adding to the Schweitzer prestige, however. It is also eliminating one thorn that is ever present: that of maintaining constant supervision over the costly pulp-preparation process.

Sole "star" of Schweitzer's own television channel is the pulp washing operation in the stock preparation department. The pulp is pumped from the ground floor to the third, where the dewatering screen takes over. Occasional pulp pile-up and plugging of the drum at this phase of operation is a problem Schweitzer management tries to avoid at all costs. For one thing, repairing such a jam-up is no simple task. The entire tank has to be emptied and cleaned before operations can resume. For another, any delay in this phase of the process slows up the production of an entire batch of pulp.

It is understandable that this dewatering process must be under more or less constant observation. Prior to the television installation, the operator had to run up two flights of stairs to the pulp-washing room at half-hour intervals to keep tab on the tank. He made a minimum of 15 such trips during his eight-hour work day.

The TV system

The installation, completed just a few months ago, is a comparatively simple one. A television camera, no larger than a home movie camera, was perched on a support a few feet above and away from the pulp washing tank. The camera is protected from the heavy moisture content in the atmosphere by a pressurized transparent case.

Industrial television differs from the kind we have in our homes in one important respect. The program is not broadcast, and there is no sound, of course. The signal comes directly through a coaxial cable, from camera to receiver.

In the Schweitzer installation, the camera is connected by closed-circuit to a television monitor two floors below. This camera, which keeps a fixed-focus on the pulp-washing machine, projects a continuous picture of operations to the monitor.

The monitor is two stories below the camera, set up adjacent to the operator's main station. Being enclosed in a plexiglass box assures maximum picture clarity and at the same time protects the monitor.

Similar in size to a 10-in. home receiver, the monitor gives the attendant a remote control picture of exactly what is taking place in the dewatering process two stories above him. The only time the operator needs to make a personal investigation of the machine is when the picture on the television screen gives him some warning of impending trouble.

What it accomplishes

Indirectly, the closed-circuit television system has sped up the papermaking process. If anything goes wrong in the stock-preparation area these days, the attendant knows about it immediately. Corrections can be made faster and before the situation gets completely out of hand.

One thing C. Petzold, plant manager, points out is that in making the installation, the Schweitzer company was not at all interested in spying on its help. "We were interested in watching our process and maintaining better control of that process. And if we could make the worker's job easier and more efficient along the way, so much the better."

Results have been so satisfactory that officials are already thinking of altering the existing circuits so that they can use ordinary commercial receivers and get larger, easier-to-look-at pictures. Moreover, the company plans to expand the existing system to cover other phases of the stock-preparation process.

The power house is another area that could benefit from a camera eye installation. The way things are set up now, the engineer in charge has to keep tabs on controls in many different locations. How much simpler it could be if all the gauges and instruments he has to observe were watched for him by a television camera and the pictures flashed to him from a centrally located monitor.

There are many other areas in a paper mill, says Petzold, where a built-in television system could improve plant management. Not the least of these is plant protection. The Schweitzer factory is spread over a large area. Maintaining adequate watch over that type of building at night is a sizable job. Why send a man into what might be a danger spot when a television camera could accomplish the same job easily and with less hazard? Pictures of what is going on at the back entrance gate, for example, could be flashed to the guard house.

There has also been talk of extending the use of industrial television to Schweitzer's other mills. The company has four in addition to the one at Spotswood: two in New Jersey, Elizabeth and Jersey City; a third in Lee, Mass., and another in Mount Holly Springs, Pa.

Industrial television has hit the Schweitzer company where it counts most — in efficiency and speed of operation, as well as in control of one of the basic processes of a paper mill.

Nomograph for viscosity of waste sulfite liquor

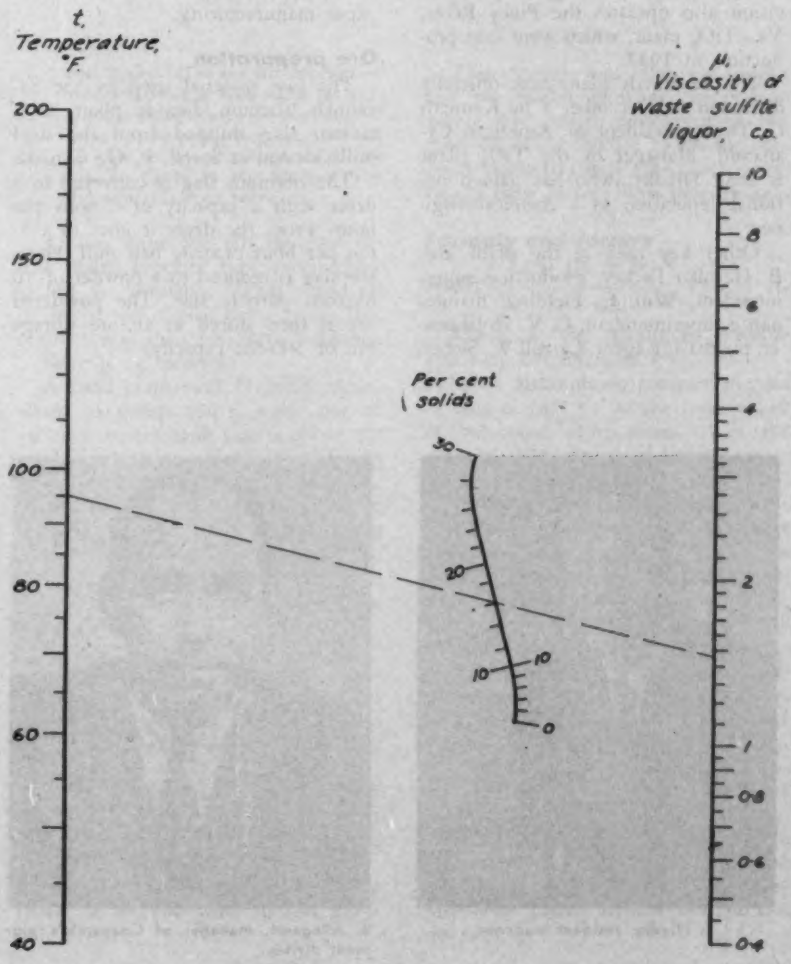
D. S. DAVIS
Professor of Chemical Engineering
Virginia Polytechnic Institute

THOSE WHO DESIGN systems for the transportation, pumping, and evaporation of waste sulfite liquor need to be able to estimate the viscosity of this solution over substantial ranges of concentration and temperature. Dependable data (2) on the influence of temperature on the viscosity of waste sulfite liquor can be correlated by means of the equation

$$\mu = a\ t^b - 0.12$$

Where μ = viscosity, in centipoises
t = temperature, in degrees Fahrenheit and a and b are functions of the concentration.

The equation can be solved accurately and conveniently through use of the accompanying line coordinate chart, which was constructed in accordance with well-known principles (1). The use of the chart is illustrated as follows: At 95°F., what is the viscosity of waste sulfite liquor that contains 16 per cent solids? Follow the dashed line, connect 95 on the t scale with 16 on the scale for percentage solids, and note the intersection with the μ scale at 1.46 centipoises. At what temperature must one maintain waste sulfite liquor that contains 20 per cent solids so that the viscosity does not exceed 1.00 centipoise? Connect 1.00 on the μ scale and 20 on the percentage solids scale with a straight line (not shown) and note that it intersects the temperature scale at 158°F.



Literature Cited

(1) D. S. Davis, 'Nomography and Empirical Equations,' Chap. 10, New York, Reinhold Publishing Corp., 1955.

(2) Hunter et al, Tappi, 36 (11) 493 (1953).

American Cyanamid Co. operates new TiO_2 plant

Cyanamid's new titanium dioxide plant

AMERICAN CYANAMID Co.'s new $15,000,000 titanium dioxide plant in Savannah, Ga., has an annual capacity of 24,000 tons and employs 260 people.

The plant covers a two-mile stretch along the south shore of the Savannah River. It is operated by Cyanamid's Pigment Div., which is under the management of J. Allegaert. This division also operates the Piney River, Va., TiO_2 plant, which went into production in 1938.

The Savannah plant was officially dedicated on December 1 by Kenneth C. Towe, president of American Cyanamid. Manager of the TiO_2 plant is Emil Hladky, who has gained national reputation as a chemical engineer.

Other key men at the plant are: B. Herman Lackey, production superintendent, Wm. C. Fielding, maintenance superintendent, C. V. Holshouser, purchasing agent, Carroll W. Sieber, technical supervisor, W. T. Kent, industrial supervisor, Jack Kenney, accountant, S. W. Smith, plant engineer, C. M. Mantiply, master mechanic, M. J. Duffy, titanium plant superintendent.

American Cyanamid produces a dozen different rutile and anatase grades of titanium dioxide, some of which are designed especially for paper manufacturing.

Ore preparation

The raw material used by the Savannah titanium dioxide plant is titanium slag shipped from the steel mills located at Sorell, P. Q., Canada.

The titanium slag is conveyed to a dryer with a capacity of 7 tons per hour. From the dryer it goes to a 7-ton per hour capacity ball mill. Here, the slag is reduced to a powder of 10 microns particle size. The powdered ore is then stored in an ore storage bin of 500-ton capacity.

Ore digestion

The powdered ore is measured into four digesters. Each digester, when fully charged, holds 20 tons of ore and 30 tons sulfuric acid. The digestion is carried out at 200°C for a period of 12 hours.

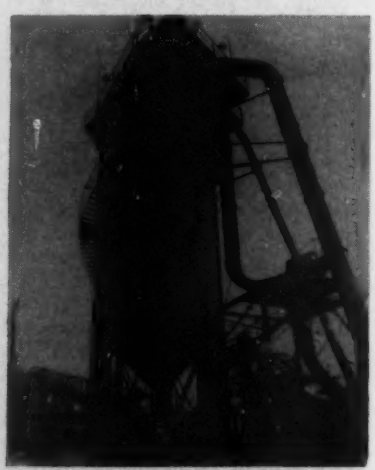
The raw liquor is pumped into settling tanks, where the sediment is allowed to settle. The supernatant liquor is then decanted, filtered and charged into three hydrolysis tanks, where under boiling temperature and proper pH conditions, obtained by the addition of caustic soda, titanium hydrate separates out.

If rutile grades of titanium dioxide are manufactured, rutile seed is added to the hydrolysis tanks. Rutile seed is prepared in a system of seed beds and seed tanks under carefully controlled conditions.

The precipitate from the hydrolysis tanks is washed and filtered three

E. Hladky, resident manager

J. Allegaert, manager of Cyanamid's pigment division



Powdered titanium slag storage unit

Powdered slag is conveyed to digester

Interior view of titanium dioxide plant

times and passed over a rotary vacuum filter. The mud from the vacuum filter is conveyed by screw conveyor to the calcining kiln, where the titanium hydrate is converted to titanium dioxide at a temperature of about 1000 — 1100°C.

The titanium dioxide leaves the kiln at 900°C and drops into a cooler.

Part of the titanium dioxide from the calciner is routed through the wet grinding process. This process consists in passing the titanium dioxide through three jet mills which use superheated steam at 500°C. From the jet mills the titanium dioxide goes through Bird classifiers and then to the bagging operation.

No problem with suction

— if you find NPSH (net positive suction head)

J. A. CABLE*

IF YOU ARE ONLY concerned with pumping water out of an open tank at sea level and at temperature less than 85°F., you do not have to read any further. You can think in terms of suction lift and let it go at that. However, once you change any of these factors, NPSH (net positive suction head) is the only right way to summarize pump suction conditions.

There are two kinds of NPSH: first, that which the pump user has available and, secondly, that which a particular pump will require. By proper comparison of the two, any solvable pumping problem can be properly fitted with a centrifugal pump.

At sea level, atmospheric pressure can be said to "serve a helping of 34 ft. of NPSH." All you have to do is be sure that there is enough to go around for all of the factors to be "waited on" in your application. These are as follows:

1. **Reduction in atmospheric pressure if the installation is much above sea level.**
2. **Vapor pressure of the product pumped at the pumping temperature.**
3. **Suction lift and friction in suction pipeline. Add the static suction lift plus all friction losses in the pipe and fittings. (On any lift application you will have a foot valve, as centrifugal pumps have to start full of liquid to be primed or you will not be able to lift anything at all. Be sure to figure in the friction drop through this foot valve.**

At this stage you tell the prospective pump supplier how much there is left as "available NPSH", and all he has to do is pick out a pump that requires less than you have available.

Here is an example:

A food plant near Flagstaff, Ariz., wants to pump 180°F water out of an open heated tank that is above the pump installation point by 2 ft. Looks easy, but let's see.

Flagstaff is about 7000 ft. above sea level, so the atmospheric pressure is less than sea level by about 3.5 psi or 8 ft. Accordingly, we start with 34 — 8 = 26 ft. provided by the atmosphere.

Next we take this 26 ft. and apply point No. 2 above. You can get vapor pressure of 180°F water out of tables or curves from many sources. This is approximately 7.5 psi or 17 ft., and we then have 26 — 17 = 9.

In this example we had 2 ft. of positive head on the suction, but this must be modified to suit friction losses in the suction pipe, so we have:

9 + 2 — friction (let's assume one foot), so we end with 10 feet available NPSH.

This example was relatively simple, but we ended with an application where the pump must require less than 10 ft. of NPSH to do the job. So, I think you will agree that everyone of these factors bears looking into.

Formula and factors

$$NPSH = \frac{2.31\ (P_a - P_v)}{SP.\ GR.} + H_e - H_f$$

where, at the maximum possible pumping temperatures:

P_a = atmospheric pressure in psia

This is 14.7 psi at sea level or 34 ft. but comes down about 1.1 ft. for each 1000 ft. above sea level.

P_v = vapor pressure in psia

SP. GR. = specific gravity

H_e = Elevation head. When water level is above pump, this is a plus figure; if water is lifted to pump, this is a minus figure.

H_f = friction head or friction loss in suction piping.

If your suction tank is enclosed, such as a vacuum vessel or evaporator, you usually have the liquid boiling at its surface, in which case $P_a = P_v$. The complete first term of our formula then becomes 0, so available NPSH then equals just $H_e - H_f$.

From this discussion you can figure your own available NPSH or see the importance of furnishing your supplier with correct data so that he can do so.

*Application engineer, Allis-Chalmers Mfg. Co. (Norwood Works).

Major advance in plywood product technology

▶ **Crezon, a resin-impregnated cellulose fiber developed by Crown Zellerbach, is permanently fused to the wood under heat and pressure**

▶ **A patching machine fills all veneer defects with a plastic compound developed by American-Marietta Co.**

A UNIQUE NEW development in plywood technology has been announced jointly by United States Plywood Corp. and Crown Zellerbach Corp.

The immediate result is a weather and waterproof plastic-surfaced fir plywood panel that promises to lower the cost and lengthen the life of homes, commercial buildings, signs, small boats, built-ins—even kitchen cabinets and "do-it-yourself" items.

Both companies say that, among other things, the new process will significantly lower production costs in the manufacture of plastic-surfaced plywood, and that it increases veneer yield from the log.

New plastic-faced plywood

The new panel, which United States Plywood will market under the name Duraply, is faced with Crown Zellerbach's Crezon, a resin cellulose plastic sheet fused to the panel surface. Duraply combines the paintability of modern plastics with the strength and versatility of plywood. Used as siding, the Crezon surfacing assures a more durable, check-free, high-quality paint finish, and the plywood is so strong that one thickness of Duraply can function as both outside wall surface and structural sheathing.

What it means

The key to the process is a new machine that automatically fills knotholes, splits and other surface irregularities in the base panel with a plastic compound providing a smooth, solid foundation for the Crezon overlay. This eliminates without any sacrifice in quality the need for scarce and expensive high-grade surface veneer normally required to provide a solid base for the plastic surface.

Commenting on the development, S. W. Antoville, president of United States Plywood, said: "This is the first of a series of contemplated improvements that could revolutionize the technology of the plywood industry." The new machine materially increases usable yields from the log, making it possible to utilize veneer from abundant, lower-cost raw material such as second growth timber and saw logs.

The plywood industry has been deeply concerned over the growing scarcity of high-grade peeler logs best suited for plywood manufacture and the necessity of finding profitable outlets for lower grade raw material which is now used only for inner plys and sheathing.

Better utilization

Crown Zellerbach's sales vice president, G. T. Ticoulat, stated that the patching machine and the Crezon overlay itself were the results of 10 years of intensive research in Crown Zellerbach laboratories and cooperative development with United States Plywood as part of a long-range objective of gaining maximum utilization of available timber resources. "This is one more step in the effort to make as many useful products from a tree as possible."

Crezon is the first non-paper product developed by Crown Zellerbach, and, with a number of more recently discovered chemical by-products, it is leading the way in the company's effort to utilize available wood resources to the fullest.

Tremendous market

United States Plywood sees a tremendous potential market for Duraply. For example, about 1,500,000,000 sq. ft. of all kinds of material will be used for siding surfaces on new homes alone in 1956. Although total production of similar products by other plywood manufacturers is comparatively small, their acceptance in the construction field is gaining ground so fast that industry output in this field doubled last year, reaching an output of more than 13,000,000 ft. Both companies say this is only a beginning.

The manufacture of Duraply begins with a panel of exterior type fir plywood with absolutely waterproof glue meeting the rigid performance requirements of the industry's joint quality control program administered by Douglas Fir Plywood Association.

The patching machine fills all defects with a plastic compound developed by American-Marietta Co. This is then cured under infra-red reflected heat, the panel is sanded, and the Crezon sheet is fused to the wood under heat and pressure.

Both firms shared development costs of the patching machine on which the pending patents are jointly held. It will be available under license to other plywood manufacturers in the near future. The cost is moderate and well within the capabilities of the average plywood manufacturer.

Product advantages

The Crezon used in Duraply in many cases eliminates one coat in a conventional three-coat exterior paint system. Good paint finishes won't check, peel or blister when applied to the plastic surface in Duraply, and they are unaffected by sun, rain and freezing temperatures.

Duraply is being marketed by United States Plywood with both one or two-side plastic surfaces in 4 by 8 sheets 5/16 to ¾ in. thick. In addition, the company will precut and package special wide lapped siding with beveled drip edges, furring strips applied and ventilation provided.

Left to right: Dr. Harry O. Schrader, general manager, Northwest Div., U.S. Plywood Corp.; Gene C. Brewer, vice president, U.S. Plywood; S. W. Antoville, president, U.S. Plywood; G. T. Ticoulat, vice president, C-Z; and William J. Zellerbach, director, marketing services, C-Z, inspect plywood panel as a workman places it in the unique machine

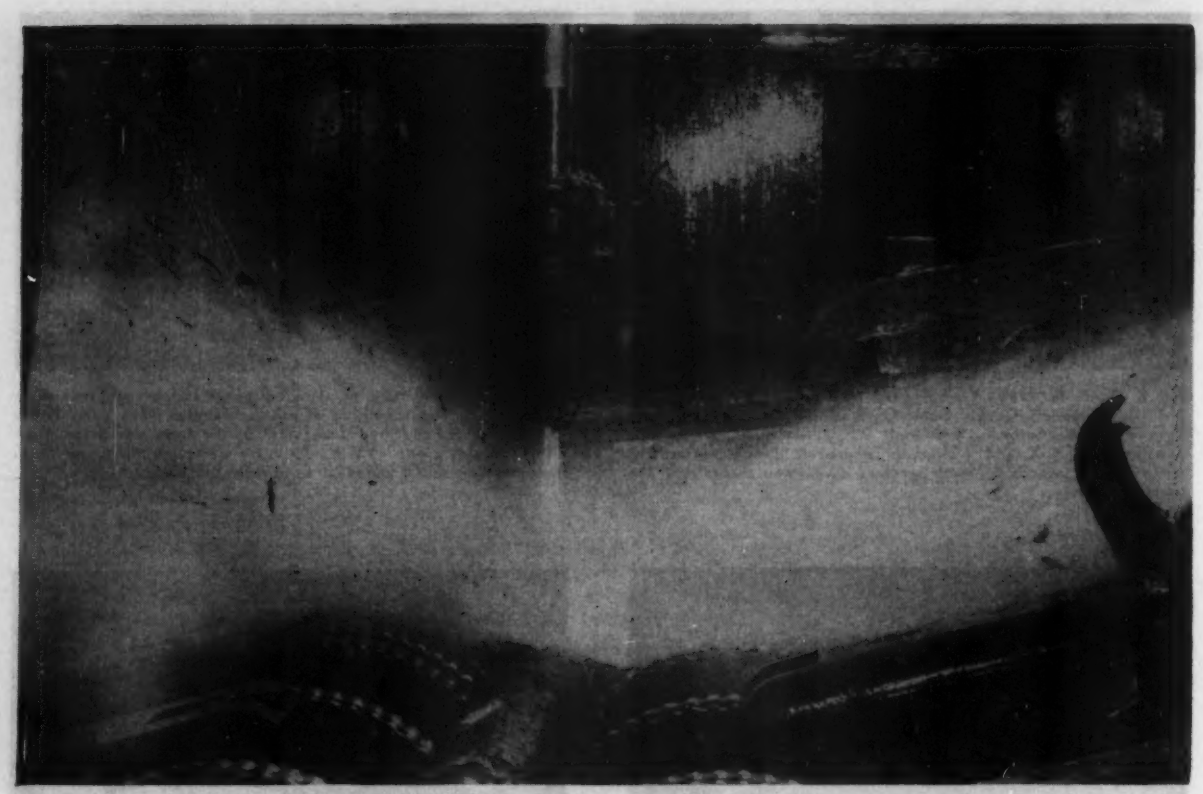
First step in production of repaired panel surfaces utilizing more economical veneer is routing of existing veneers. Then panel is fed into special new machine that forces plastic filler against an oscillating "doctor blade" which fills every defect in the panel face. The panels are cured under infra-red reflected heat

Following automatic filling of defects in panel, it is sanded to obtain a smooth solid surface ideal as the foundation for a plastic overlay

Plastic surface called CREZON, a resin-impregnated cellulose fiber sheet, is applied to the panel and then permanently fused to the wood under heat and pressure

For attractive built-ins and other cabinet work, Duraply offers splinter-free cutting. It is especially welcomed by do-it-yourself fans. It is available in big, strong sheets of standard sizes and thicknesses

Lap siding of Duraply saves approximately 30 per cent in labor and materials over other types of wood siding. A superior base for paint, the Crezon surface resists such defects as checks, cracks and excessive grain raise found when wood weathers



Bellingham barker that strips bark from rotating logs with water jets under pressure of 1450 psi

Unique wood-handling system at Crown Zellerbach's Camas mill

OPERATION "PULP WOOD TO CHIPS" at the Crown Zellerbach Corp.'s Camas, Wash. mill has reached a degree of efficiency that is difficult to surpass. Huge grapples of a Berger crane reach into the river to pick up 50-ton bundles of strapped pulp wood. The bundles are strapped with steel straps to facilitate handling and to prevent the heavier logs from sinking while being towed or stored in the river.

A company tug moves the rafts of pulp wood into a pond where the bundles are moved by loggers into position below the crane grapples.

The bundles of logs are then lifted to the log deck. The crane operator in the cab has full view of the bundles at all times and during all phases of the operation. He can lower or raise each grapple separately as required.

After the bundles are deposited on the log deck, the straps are cut and the logs moved by conveyor to a 108-in. swing cut-off saw, which cuts them into 24-ft. lengths. A drag saw is used for oversize logs that cannot be handled by the swing cut-off saw.

The 24-ft. logs are then fed by conveyor into a modified 1200-gpm Bellingham hydraulic barker. The hydraulic barker, with a nozzle pressure of 1450 psi, strips the rotating logs of all bark with remarkable ease and with a minimum loss of wood. The hydraulic barker is served by a six-stage impeller pump.

Logs larger than 34-in. in diameter are conveyed from the barker to a band saw where they are sawed into cants of a size that can be handled by the chipper. The band saw has a maximum opening of 6 ft. and is equipped with a mechanical ratchet setter and a mechanical offbearer. A single sawyer operates the whole band mill operation.

Logs or cants up to 34 in. in cross-section are fed into a six-knife, 153-in. diameter disc chipper powered by a 1500-hp, 7000-volt synchronous motor.

A chain-and-flight conveyor moves the chips from the chipper to a 72-in. belt conveyor. The belt conveyor discharges chips into a tripper which is mounted on rails and can trip the chips off the belt into any one of six large concrete chip silos. Each silo holds about 400 units of chips equivalent to 160,000 FBM of wood.

Bundle of logs being raised from the river by a 50-ton Berger crane

Berger crane transports and deposits a bundle onto the log deck

108-in. swing cut-off saw and drag saw. The latter is used on logs that are too large in diameter for the swing cut-off

Saw at the band mill operation has a maximum opening of 6 ft., permitting the center cutting of logs up to that diameter

View down the throat of the chipper showing one log partly chipped and another ready to move down the chute

View of 72-in. chip belt showing the flow of chips from the wood mill to the six storage silos, each of which holds about 400 units

New results and ideas –

at the 42nd annual meeting of the Technical Section of the Canadian Pulp and Paper Association

Use of sodium sulfite at the grinder showers

(James Cochrane, Powell River Co. Ltd.)

▶ The addition of sodium sulfite (0.8 per cent on the dry weight of screened groundwood) to the grinder showers has reduced grinder power consumption by 8.7 per cent and increased groundwood brightness by 2.5 points G.E. This sodium sulfite treatment has had no significant effect on pulp yield, groundwood strength, or newsprint machine operation in the range of 700 to 1900 fpm.

Effect of pretreatment on diffusion through wood

(Phillip Luner, Pulp & Paper Research Institute of Canada)

▶ Heat treatment results in an increase by a factor of 2.2 in the diffusion coefficient through radial and tangential sections of wood discs. It has no effect on the diffusion rate through the longitudinal sections. Possible explanations for this phenomenon are (1) the swelling of the lignin gel results in increased porosity and (2) water-soluble wood components are removed on pretreatment. Normally the diffusion ratio of longitudinal to tangential diffusion for black spruce is 30:1.

Penetrability of wood

(J. E. Stone, The Institute of Paper Chemistry)

▶ Heartwood has been observed to be at least 1000 times more difficult to penetrate by a cooking liquor than sapwood. For this reason, heart- and sap-wood should be regarded as two entirely different sources of pulp.

▶ The explanation given for the difficult penetrability of heartwood is the formation of tyloses which plug the vessels and thereby inhibit penetrability. According to a remark made from the floor by Dr. Jenner, State University of New York, tylosis in wood is usually associated with the presence of a certain strain of micro-organisms.

Sulfite pulping of woods of the Northern B. C. coastal region

(G. R. Harris and M. Wayman, Columbia Cellulose Co. Ltd.)

▶ Rot-containing woods produce a markedly inferior raw pulp compared to sound woods. Pulp from rot-containing woods showed higher permanganate numbers (by as much as 4.1 units), lower brightness values (in the range of 30-38 per cent instead of 55-72 per cent), higher silica and ash contents, higher soda soluble content, and a much lower alpha-cellulose content (the maximum-minimum differences between sound and rot-containing hemlocks were 5.87-2.65 per cent).

A comparison of the individual raw pulps produced from sound woods showed that hemlock produced pulp with the highest alpha-cellulose content. Balsam and spruce were somewhat lower in alpha-cellulose content.

A comparison of sodium, calcium, and mixed-base liquors in the sulfite pulping of western hemlock

(G. R. Harris and M. Wayman, Columbia Cellulose Co. Ltd.)

▶ Sodium-base liquor was found to be superior to calcium-base liquor when cooking with direct steam to a disolving pulp grade. The sodium-base cooked sulfite pulp showed (1) lower permanganate number at a somewhat higher pulp viscosity level; (2) higher viscosity:permanganate ratio; (3) higher alpha-cellulose content; (4) higher brightness; (5) higher pulping efficiency factor; (6) higher screen yield, and (7) lower soda-soluble content.

▶ The use of sodium-base liquors required longer actual cooking time, which is not in agreement with the results obtained by some other investigators. However, it is pointed out that sodium-base liquors can be brought to maximum cooking temperature in less time and thus reduce total cooking time.

▶ Mixed-base liquors tended to yield values intermediate to those shown by sodium-base and calcium-base liquors.

Studies on used paper machine wet felts

(George C. Arnold, D. L. Riefstahl Jr., and N. S. Grant, Spruce Falls Power & Paper Co. Ltd.)

▶ Since new felts are expensive and since "broken-in" felts often operate better than brand new felts, it should be the objective of each mill to run the felts as long as possible.

▶ The best felt washing treatment, developed in the laboratory and subsequently adopted to mill operation, consists of (1) a wash with an acid compound, (2) followed by a rinse, and finally (3) a wash with an alkaline compound.

▶ Weight tests were used as an index of felt wear to show some repetitive patterns of uneven or uniform wear. Since generally the press itself is the cause of uneven felt wear, regrinding and occasionally recrowning of the presses will correct an uneven wear condition.

A new type of moisture control system

(Henry S. Drinker, The Foxboro Co.)

▶ A new type of moisture control system for a paper machine measures the moisture in a continuous running sheet at the reel and regulates the steam to the dryers. The operating principle uses the paper web as a part of the measuring circuit. The measuring head is an electrical condenser in contact with one side of the sheet. The capacity of the condenser varies with the sheet moisture. The instrument measures capacity in terms of moisture and changes the dryer temperature automatically to maintain constant moisture.

(Continued on page 1129)

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For new paper machines—or to increase efficiency of present machines—you'll obtain the most satisfactory output if your vacuum pumps measure up to these Roots-Connersville *plur-ability* factors:

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High attendance and quality of papers mark 41st annual Tappi meeting

WITH AN ALL-TIME registration record of more than 2500 delegates and a remarkably well planned program of top quality papers, Tappi held one of its most successful annual meetings at the Commodore Hotel, New York, February 19-23.

While the 41st annual meeting was held in a year that promises to set new records both in plant expansion and production, the feeling of confidence that pervaded the meeting seemed to have its roots not so much in past and present production accomplishments as in an intimate understanding of what makes the industry tick.

Karl Elderkin re-elected

A measure of Karl O. Elderkin's (general manager of Bowaters Southern) success and popularity as president of Tappi was the announcement of his re-election as president, while W. D. Harrison, vice president in charge of production, Riegel Paper Corp., will continue for another year as vice president. Newly elected to the executive committee are Harold M. Annies, technical director of Oxford Paper Co.; P. S. Bolton, director of research, Robert Gair Co. Inc.; Harry S. Spencer, mill manager, Howard Smith Paper Mills Ltd.; and Olin W. Callaghan, manager of special accounts, Edgar Bros. Co.

Harry F. Lewis receives Tappi medal

The successful molding of technical men reaches far beyond the immediate objective — that of endowing them with the necessary knowledge and qualifications to conduct research or assume the technical and engineering responsibilities of the industry. Its influence is also felt in the confidence, the vigorous growth and the general level of maturity of the entire industry.

In recognition of Dr. Harry F. Lewis' exceptional contribution to the pulp, paper and paperboard industry, both as a teacher and a research worker, he was awarded the 1956 Tappi gold medal. Dr. Lewis is vice president in charge of academic affairs at the Institute of Paper Chemistry, Appleton, Wis.

The University of Maine Honor Award was presented to George E. Dyke, Robert Gair Co. Inc.

Keynote discussions

The need for trained manpower was forcefully brought to the attention of the delegates by Karl O. Elderkin, who foresaw a doubling of the industry's output in the next 20-25 years and the consequent requirement by the industry of an additional 100,000-150,000 men to run the new mills.

The storage and preservation of pulpwood under water was another topic that was brought into clear focus by K. C. Chesley and J. C. Hair of Crossett Paper Mills and J. N. Schwartz of Bowaters Southern Paper Corp.

The new developments in fourdrinier machines were disclosed in a symposium which included a panel discussion in which representatives of Beloit Iron Works, Black-Clawson Co., Pusey & Jones Corp., Rice Barton Corp. and Sandy Hill Iron & Brass Works most expertly described various important improvements made by their companies and predicted developments in fourdrinier construction and performance that may be expected in the future.

Following the panel discussion there were papers on suction roll and press section noise reduction by E. J. Justus and C. B. Dahl, Beloit Iron Works, and S. G. Holt and D. E. Holcroft, Scott Paper Co. The levels of noise reduction obtained due to the arrangement of holes in a helical and in a more random pattern were compared. Greatest noise reduction was obtained by combining the effect due to the helical or random hole arrangement with that of new silencers.

New waste liquor disposal methods were discussed by the chemical engineering section in an unusually interesting program. K. N. Cederquist, Stora Kopparbergs Bergslags A.B., Falun, Sweden, showed how organic material, in solution or suspension, can be completely oxidized under pressure at temperatures of 190° to 230°C.

B. Brunes, the Swedish Steam Users Association, discussed the equipment of a wet combustion plant and listed some over-all process efficiencies of the wet combustion method as 85, 77, and 67 per cent against those of the evaporation and burning method of 62 and 41 per cent. The cost of wet combustion installations under Swedish conditions were estimated at $900,000 to $1,100,000 against about $750,000 for the evaporation and combustion method.

W. H. Gauvin, McGill University, described a new method of chemical recovery from waste liquor based on the application of atomized suspension techniques. In this experiment, the liquor is atomized into the top of a 10-ft. high, 8-in. diameter tower, the walls of which are maintained at a high temperature of 400°-800° C. The suspension subsequently passes through successive zones of evaporation, drying, and chemical treatment. The method is one of utmost simplicity and permits a certain degree of control and direction of chemical reactions through the introduction of reacting chemicals. This makes it an extremely adaptable operation for all chemical process plants.

Among the new equipment in stock preparation reported at the meeting are:

(1) The horizontal rotary filter for fibrous products described by J. E. Kenney, Dorr-Oliver Inc. The machine is a horizontal washer operating on the principle of flat surface feeding and washing.

(2) The new Sutherland refiner described by L. M. Sutherland, Sutherland Refiner Corp. The performance of this new refiner has been exceedingly successful. The unit features a specialized and somewhat unique bearing arrangement which permits a speed range of from 400 to 1200 fpm. The unit is designed for operation at 3 to 15 per cent consistency feeding by pump or screw conveyor, as required.

(3) Major simplifications in the four-disc refiner, by allowing the rotating element to semi-float axially with fluid and by balancing refining pressures within the refining zones, were reported by E. D. Jones and E. H. Cumpston, E. D. Jones & Sons Co.

(4) The Vorvac separator, a centrifugal separator which is capable of separating efficiently both the dirt and gas from papermaking stock, was described by John D. Boadway and Horace Freeman, Consolidated Paper Corp.

Another centrifugal cleaner, the Vorject, has recently been developed,

Strictly Informal

Observations are spiked with keen discernment when R. S. Hatch, vice president of Hudson Pulp & Paper Corp., compares notes on expansion problems with Roderick O'Donoghue of Roderick O'Donoghue & Co.

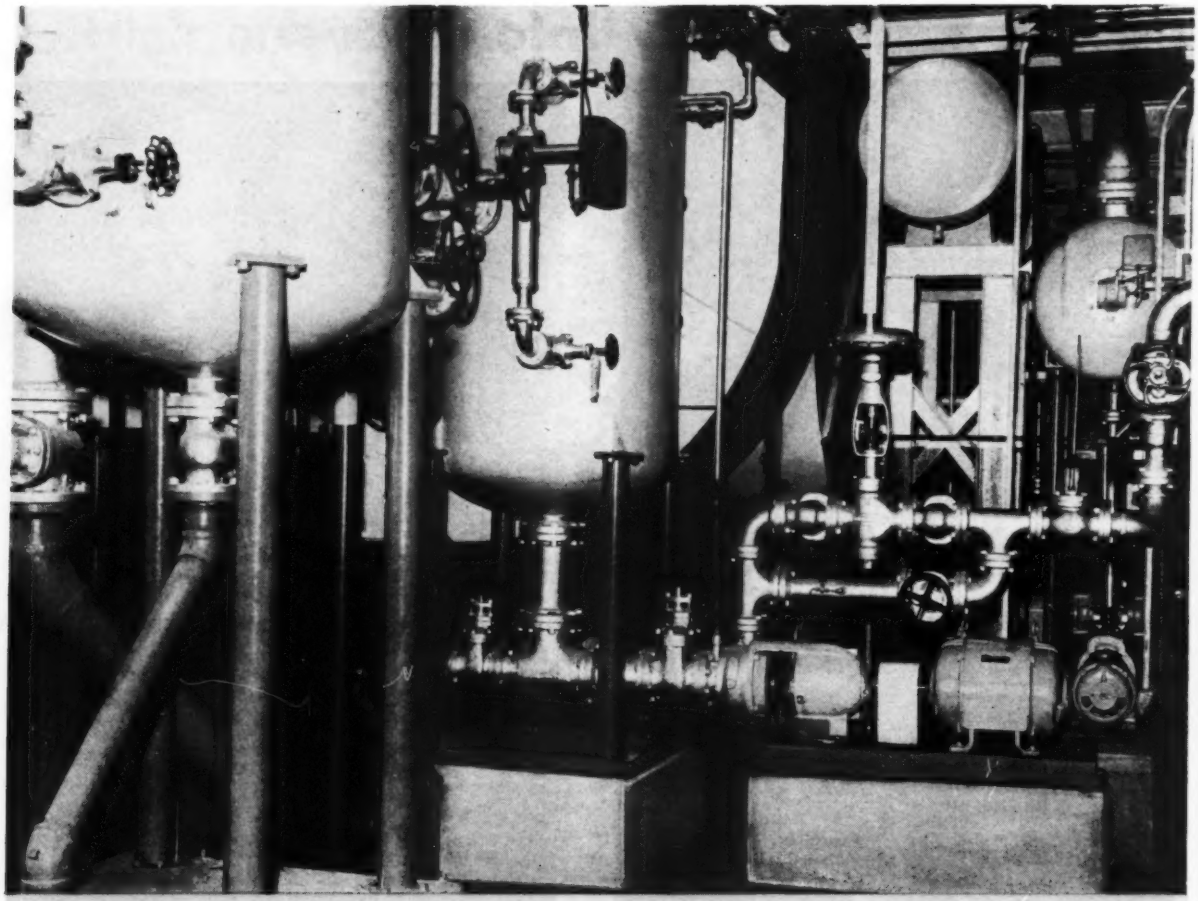
It is unlikely that a merger between two leading paper mills in Green Bay is indicated when R. E. Kissel, general superintendent of Charmin Paper Mills Inc., talks things over with N. L. Malcove, (left) technical superintendent of Marathon's Northern Paper Mills.

The affinity of synthetic rubber for paper, with the resulting upgrading of the latter, is a factor that attracted Doran Gausser and R. C. Bascon, both of Hycar American Rubber, to the Tappi conference.

The eternal question asked by an editor is, "Will you contribute a paper for publication?" Seen here are J. Mck. Limerick, research director of Bathurst Power & Paper Co. Ltd., and A. W. J. Dyck, editorial director of THE PAPER INDUSTRY.

Chemicals in papermaking is an intriguing question of many facets. This question is on the minds of Bob McCarron of Morningstar, Nicol Inc. and F. X. Manogue (assistant superintendent) and John Verwayen, (chief engineer), both of Gibraltar Corrugated Paper Co. Inc.

When two chemists meet, the exchange of information often has a "reversible" character. Seen here are E. N. Poor, chief chemist of Hudson Pulp & Paper Corp., and John B. Calkin, assistant to the president, Foster D. Snell Inc.



Typical large Fulton system on big, fast Fourdrinier in Maine.

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Fulton dryer drainage systems are going onto old machines and small machines as well as onto today's giants—and the reasons are plain.

Automatic control of the drying operation under all conditions and at all speeds.

Properly graduated temperatures from the wet end dryers clear on through the section.

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Because the smaller the machine, the more simple the system, Fulton equipment for older and smaller machines involves only a modest investment—and that soon amortized.

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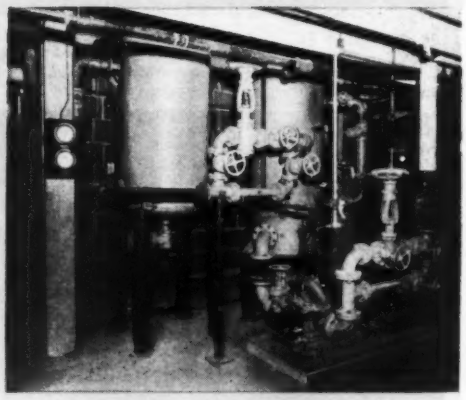

Typical two-stage condensate return unit with automatic controls.

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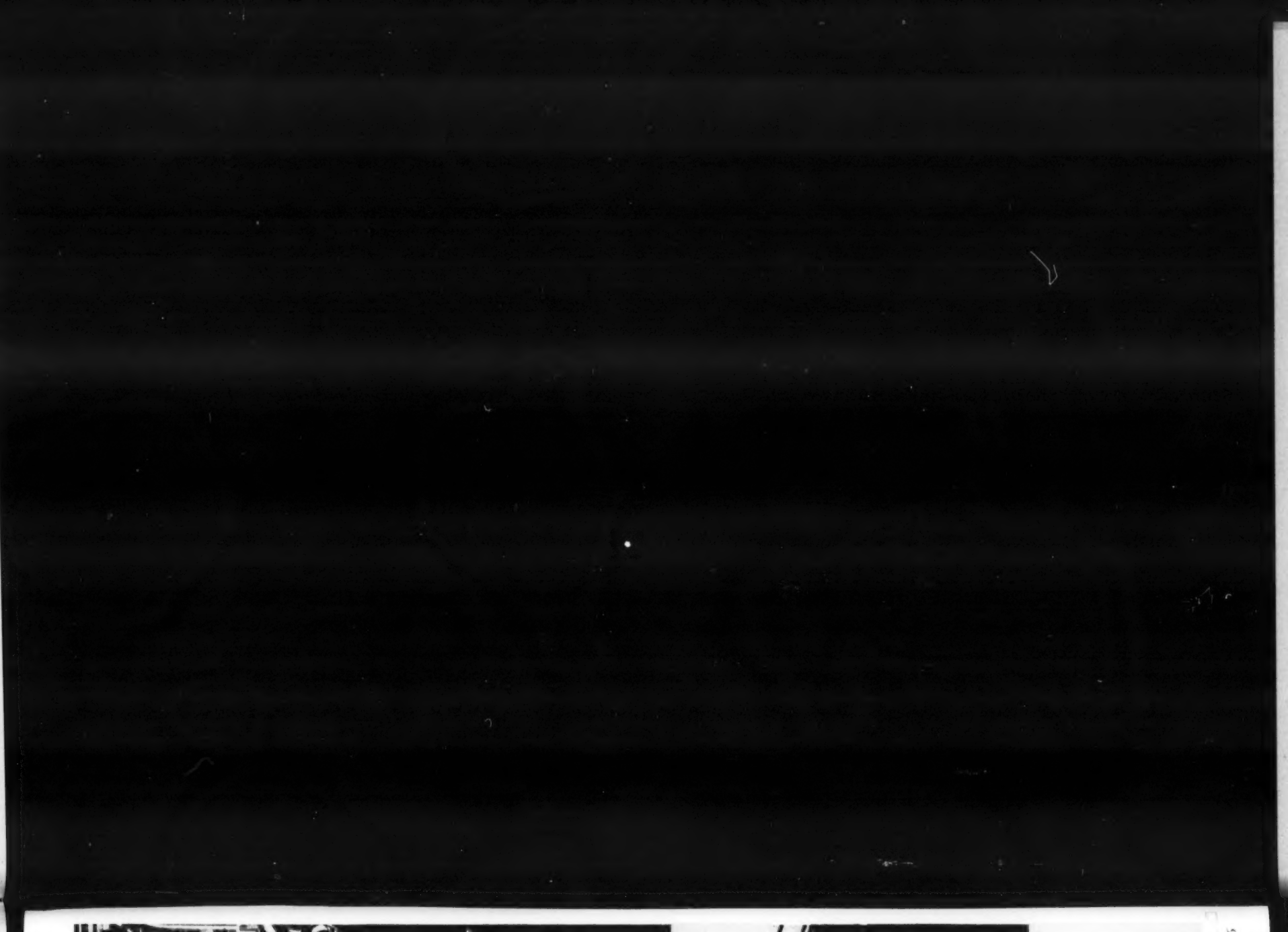

This looks like a discussion on coordination of activities between Tappi and CPPA. Seen here are Richard T. Bingham, technical assistant to the secretary of Tappi; Douglas Jones, secretary of the Technical Section of CPPA, and Michael J. Goloff, chief engineer of St. Regis Paper Co. at Kalamazoo

If the problem is one of paper machine hoods, ventilation or air supply, it is half solved by merely bringing it to the attention of J. O. Ross of J. O. Ross Engineering Corp. Seen with Mr. Ross (r) is T. R. H. Murphy, consulting engineer for Mead Investment Co.

The U. S. Forest Products Laboratory at Madison, Wis., is the source of many new results and ideas that are of benefit to the pulp and paper industry—and here is that man O'Donoghue again, in conversation with G. H. Chidester, chief of the Division of Pulp and Paper at the Forest Products Lab

There is no end to what chemicals can do for pulp and paper. But, every new project bears a maximum guarantee of success only if carefully planned and directed. Seen here are Arthur Baker and Fred Berggren of Oldbury Electro-Chemical Co. with J. W. Gilbert, research director for International Paper Co. at Mobile

according to John D. Boadway and Horace Freeman, Consolidated Paper Corp. The Vorject is said to combine the advantages of high capacity with efficient cleaning, and special features in its design allow easy control of solids rejection without allowing air to be drawn into the unit.

Among new developments in papermaking materials, results of studies of the sorption of guar gum by bleached sulfate, kraft and boxboard, reported by J. E. Keen and J. W. Opie, General Mills Inc., show that sorption is relatively independent of gum concentration after a definite quantity of guar gum has been absorbed. Sorption equilibrium is obtained in a short time.

The nature, general properties, and the potential uses of a number of new resins of the thermosetting type, which are prepared by a simple method from the organic ingredients of sulfite waste liquor, were described by A. A. Morton, H. S. Hooper, and R. J. Snare, Penobscot Fiber Co. The resins lend themselves to various polymerization and condensation reactions. They show excellent prospects of being made adaptable to various filtration operations and petroleum refining. Their dispersions are compatible with natural and synthetic rubber latex.

A new concept in paper sizing, *i.e.* with an oil-repellent size, was reported by J. H. Ernlund, Minnesota Mining & Manufacturing Co. The new chemical has resulted from research in the field of fluorinated organic compounds. The treatment with this chemical makes the cellulose fiber organophobic or repellent to organic liquids. This discovery makes it possible to prepare a grease-resistant paper through chemical treatment on the paper machine without having to fill the voids in the paper sheet.

A review of the new durable biocides, which are complex salts of copper and zinc, and their importance in the development of durable biostatic paper products was reported by C. C. Yeager, Scientific Oil Compounding Co., and R. T. Seith, Mosinee Paper Mills. The biostatic paper products are being used by the electrical industry for insulation purposes, by building contractors for basementless houses, by the packaging industry for mold-resistant packages, and by government agencies for moisture-proof military barriers. It is anticipated that biostatic paper products will find extensive application in grain storage bins, tarpaulins, temporary agricultural water dams, etc.

APPA optimistic in 79th annual meeting

VISIONS OF AN ENORMOUSLY increased world consumption of paper, together with tremendous increases in United States productive capacity, featured the 79th convention of the American Paper & Pulp Association at New York during Paper Week, February 19 to 24.

Coupled with these views of the future, by a unique coincidence, announcements were made of extensive expansion of the industry in the Pacific Coast area. As a variation from the heavy developments of paper production in the South, the Star of Empire is blazing its way into the Pacific Northwest.

Other highlights of the convention were the discussions of expanded use of plastics, latices and chemicals of the synthetic resin group in the development of special papers for new uses. But these were only incidental to the consideration of the increasing demand for papers and paperboards, which indicates that in the next two years the industry will expend one and a third billion dollars in modernization, plant expansion and new construction—the greatest expenditure for a comparable period in the history of papermaking.

Leading the APPA in its 80th year will be David L. Luke, who was elected president of the organization to succeed Donald S. Leslie of Hammermill Paper Co. Mr. Luke is president of West Virginia Pulp & Paper Co.

The new first vice president is J. R. Kimberly, president and chairman of the board of Kimberly-Clark Corp.

In discussions of future production, the industry economists estimate that production will be more than 33,500,000 tons by the end of 1960 as compared with the slightly under 30,000,000 tons in 1955. For the first quarter of 1956 operations will be about 100 per cent of rated six-day capacity and for the rest of the year not much less than that figure, or possibly even more. The increased capacity is expected not only to meet the expanding per capita use of paper in the United States, but also to take over a portion of the world demand.

Paralleling the estimates of increased business come reports of prospective expansions, especially in the Far West. And all of this is credited to the industry's recognition of the potential forest resources of the South and West, particularly in view of the far-seeking steps taken by the major paper mills to grow their own supplies of pulpwood and not depend, as in days of old, on forest products from scattered sources. Paper production and reforestation go hand-in-hand in the plans for the future.

Symptomatic of this trend are two major developments which absorbed the interest of the manufacturers attending the convention. International Paper Co., whose principal development has been in the use of southern pines in Dixieland states, is now looking westward. Not only has International begun negotiation for Pacific Coast development, but it has also closed a $33,000,000 deal with Olin Mathieson Chemical Corp. for nearly 400,000 acres of timberland in central Arkansas, eastern Texas and western Louisiana. The Pacific Coast negotiations are admittedly for the acquisition of timber lands with the over 2 billion feet of timber—of which three quarters is in Oregon and the balance in California and Washington—from the giant Long-Bell Lumber Co. Although negotiations will not be concluded until April, both companies admit details are under consideration.

While International is contemplating this invasion of the West, Georgia-Pacific Plywood Co. has organized a papermaking subsidiary, Georgia-Pacific Paper Co., to start with 90,000 tons of annual production at a mill to be built near Toledo, Ore. The company has 4 billion feet of timber in this area. In the neighborhood of $20,000,000 is involved. And the announcement tended to spike newspaper reports that Kimberly-Clark Corp. was hoping for a union with the plywood company.

The forestry operations of the major companies may meanwhile be complicated by the new federal minimum wage law raising the figure from the present 75 cents per hour to $1. As a result, the companies may take over much of the pulpwood cutting by introducing economies through the use of highly trained woods crews with labor-saving machinery.

In the mass of news from the dozen and more separate associations whose meetings made up the program of the week were the following items of importance:

▶ Dr. Louis T. Stevenson, economist for the APPA until his retirement, estimated that if there is no inflation and only a moderate increase in the price level, sales by 1965 will reach 14 billion dollars, as against less than 10 billion in 1956.

▶ Net income in 1954, the latest year for which figures are available, was 5.6 per cent, a material reduction from the income in 1947, and of this much was retained for future expansion.

▶ World demand in a year or two may reach 65,000,000 tons annually, as compared with a present 62,000,000 tons. United States present consumption is close to 36,000,000 tons, of which well toward 5,000,000 is in imports of standard newsprint from Canada.

▶ Perhaps a concluding paragraph might summarize the thinking of the industry in planning for the future, when Allen Abrams of Marathon Corp. says: "The consumption of paper will increase at a greater rate than our population, for paper is becoming more important in the dissemination of knowledge, the transportation of articles, and the creation of goods which will make for healthier and happier living. Research can be the leaven which will raise our industry to summits quite beyond our present concepts."

David L. Luke, new APPA president, speaks at annual Open Industry Meeting

OPTIMISM tempered by caution gave theme to the APPA convention in New York. It was everywhere apparent as the industry's top men met after a year that saw all production records broken, technological dreams realized and a could-be-worse picture on the political horizon.

The general question seemed to be, "Will we do it again?" Will pulp and paper once more smash past output performance? And the answer was an unqualified, "Yes." Experts foresaw an ever-increasing demand—especially overseas—and technical improvements that will make it possible to run bigger machines at faster speeds.

Woods operations, materials, papermaking and merchandising—all phases of the industry were in for close scrutiny. The men-who-know had their say on the outlook for pulp and paper. It was a healthy outlook.

When Donald S. Leslie, president of Hammermill Paper Co. and retiring APPA head, presented his annual message it was a plea for continued and unqualified support for the APPA and its work. Calling the pulp and paper industry "the best informed industry in the country," he declared that the primary purpose of APPA is educational and statistical. Members supplied with the facts and figures they need, he said, will be well qualified to bring continued progress to this—the nation's fifth industry.

Injecting a small word of caution, Mr. Leslie warned that, "Things don't always go up." The present tremendous demand must let up here and there, he said, but a well-informed leadership within the industry will cope with the situation.

Mr. Leslie's remarks keynoted the 79th annual convention of the APPA

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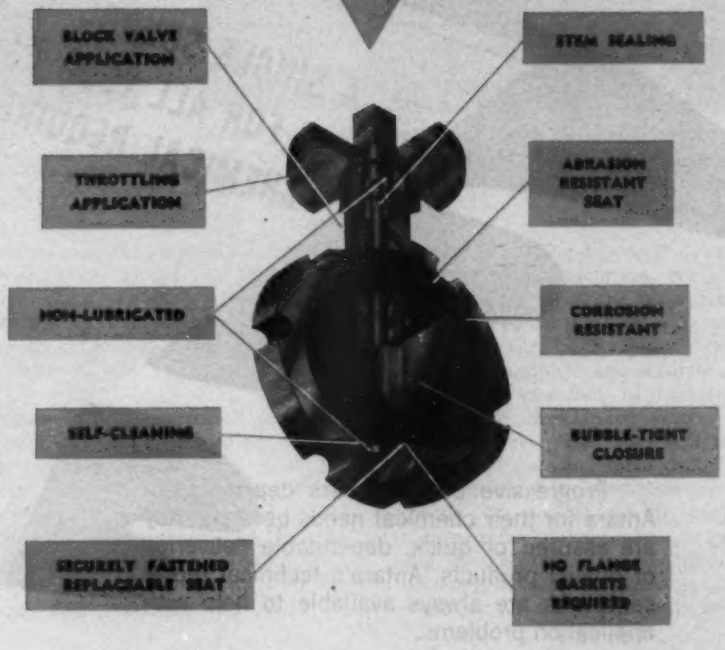

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Discussing the future of the pulp and paper industry, two participants in the Open Industry Meeting are Donald S. Leslie, retiring APPA president, and E. J. Gayner III, president of Brunswick Pulp & Paper Co.

The APPA's new first vice president, J. R. Kimberly (r), meets with speakers at the Open Industry session: Allen Abrams, a director of Marathon Corp., and George Olmsted Jr., president of S. D. Warren Co.

as it closed its doors on a four-day session that saw discussion of the varied problems that confront such a wide-spread and influential business as the making of pulp and paper:

Production: It was estimated that the industry's production during 1955 —just over 29,896,000 tons—was 12 per cent more than in 1954, when a record high of 26,657,000 tons was reached. The percentage increase in output was more than double the average growth of 5.3 per cent (not compounded) since 1947 and is exceeded only by the 20 per cent increase in 1950, when output was stimulated by the Korean War.

The Future: An APPA survey shows that production capacity in the paper and board industry will be at an estimated minimum of 33,615,000 tons by the end of 1960. This is an increase of 2,857,000 tons over capacity at the end of 1955, with paper capacity increasing 1,392,000 tons and paperboard 1,465,000 tons. In the paper group, newsprint shows the biggest capacity increase—an estimated 486,000 tons. While in the board group, container board is ahead with an estimated 1,023,000.

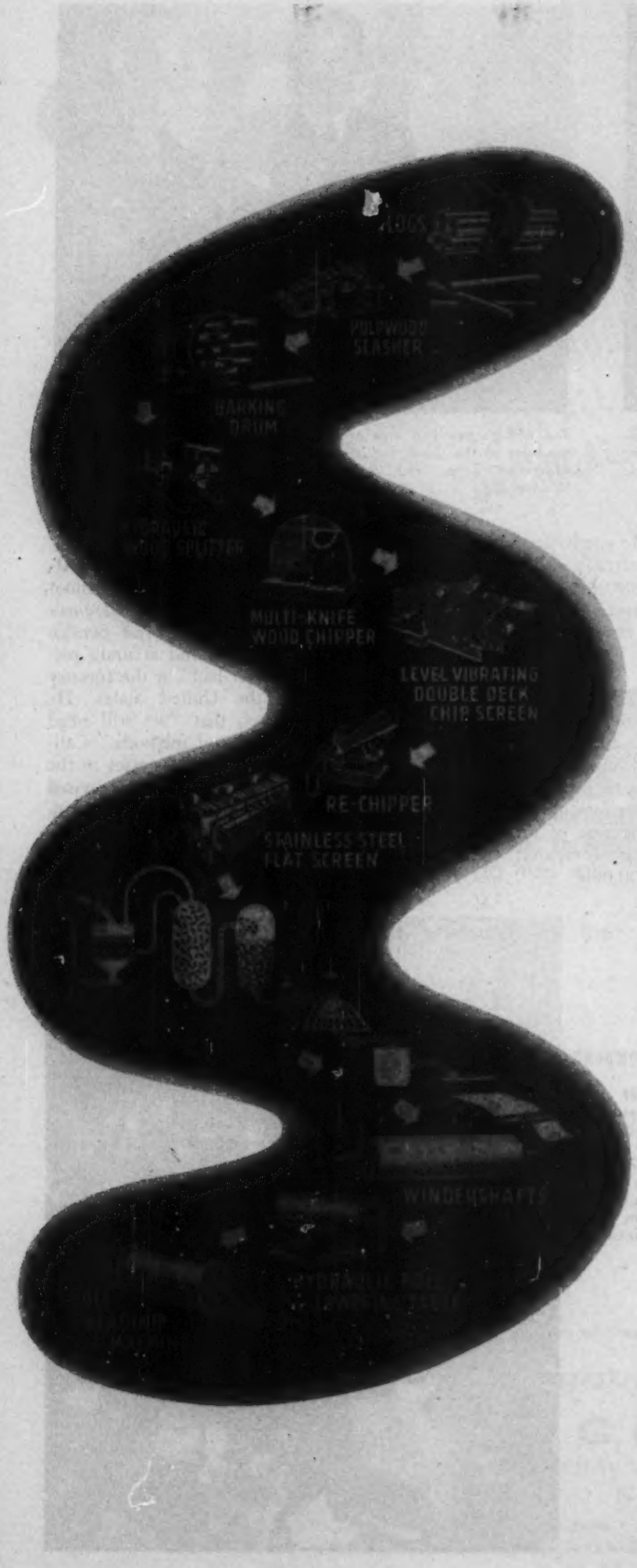
Consumption: 1955 saw a new high in apparent consumption of paper and board—a total of 34,500,000 tons. Per capita consumption was the highest in history, 418 lb. for every man, woman and child in the U. S.

World Demand: E. W. Tinker, executive secretary of APPA, predicted during the convention that world demand for paper and board should reach about 65,000,000 tons within a year or two. He emphasized that with consumption already at an all-time high of 62,000,000 tons and with demand increasing, the American industry faces new opportunities for growth.

Expansion: The nation's paper industry will spend a record $1.3 billion on expansion during the next two years to boost capacity about 8 per cent, according to John Vogel, APPA economist. "Expansion," he declared, "will be at the rate of around $65,000,000 a year, compared with last year's $500,000,000.

Timber: Speaking before the American Pulpwood Association, Prof. Albert C. Worrell of the Yale School of Forestry called the *Timber Resource Review* of the U. S. Forest Service "the most complete and accurate picture we have ever had" of the forestry situation in the United States. He added, however, that "we still need better basic data and methods." Calling attention to the weaknesses in the *Review*, he said it can be revised to provide a valuable base for planning. Dr. Worrell cited the need for continuing forestry forecasts and called for private groups such as the

Annual highlight of the APPA convention is the Open Industry Meeting at the Waldorf-Astoria. Prominent spokesmen for the industry discuss its problems, its future and its accomplishments



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APA to play a major role in providing the U. S. with the best possible supply of forestry products.

Chemical Additives: Discussing legislation now pending that would place serious restrictions on the use of chemical additives in foodboards and other packaging paper and paperboard, E. W. Tinker expressed the hope that any bill that may be passed will not hamstring the industry. Industry leaders, he said, know that the chemicals used in manufacturing paper are harmless to the public and think that no legislation is needed in this area . . . Government records show that there has never been a single instance where health has been harmed by any of the packaging materials made by the paper industry.

Overexpansion: In an effort to dispel "current illusions" about the paper industry, E. W. Tinker pointed out during the meeting that while the industry is expanding and profitable, it is not making "exhorbitant" profits. He emphasized that while the industry will continue to grow, its rate of growth will be normal and probably even conservative, maintaining balance with demand. Tinker added that percentagewise, as related to net worth and sales, net earnings in the paper and pulp industry have declined in the past eight years.

Atomic Energy: Great expansion in the use of both radioactive isotopes and radiation machines in industry, medicine and agriculture was forecast by Gordon R. Molesworth, atomic energy consultant to business. The next few years, he said, will see thousands of companies making routine use of radiation as an aid to production.

Stream Improvement: The National Council for Stream Improvement Inc. plans to expand its research activities in many fields: A new project at the University of Michigan in connection with water resources development: intensified activity in waste sulfite liquor abatement — including the development of high-protein feed production, and the possible expansion of activities to include the study of atmospheric pollution.

Latin America: If Latin America's present growth rate is maintained, the estimated per capita demand for paper and paper products should rise from 19.4 lb. in 1954 to about 33 lb. in 1965, an increase of 70 per cent. Ralph S. Stillman, president of the Grace National Bank of New York, called for a "sympathetic attitude toward Latin America's economic problems," the extension of longer credit terms, and better service as ways of taking advantage of the "unparalleled" trade and investment opportunities Latin America offers this country.

Fine Paper: Looking ahead to the next decade, we may expect an annual per capita consumption of fine paper of as much as 20 lb., according to M. C. Dobrow, executive secretary of the Writing Paper Manufacturers Association. The industry can anticipate production requirements of close to 2,000,000 tons in 1965.

Wood Pulp: Output and use of wood pulp were also at new high levels. Total production was 20,800,000 tons, about 14 per cent more than in 1954. The mills consumed an estimated 21,500,000 tons, 13 per cent more than in 1954, and 9,000,000 tons of waste paper . . . . A study by the United States Pulp Producers Association Inc. shows that since the end of World War II U. S. capacity for the produc-

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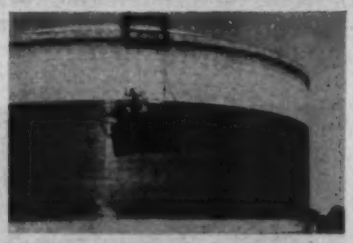

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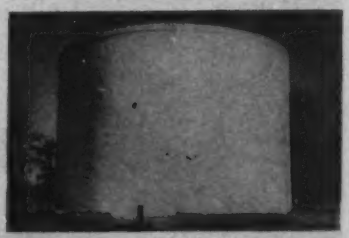

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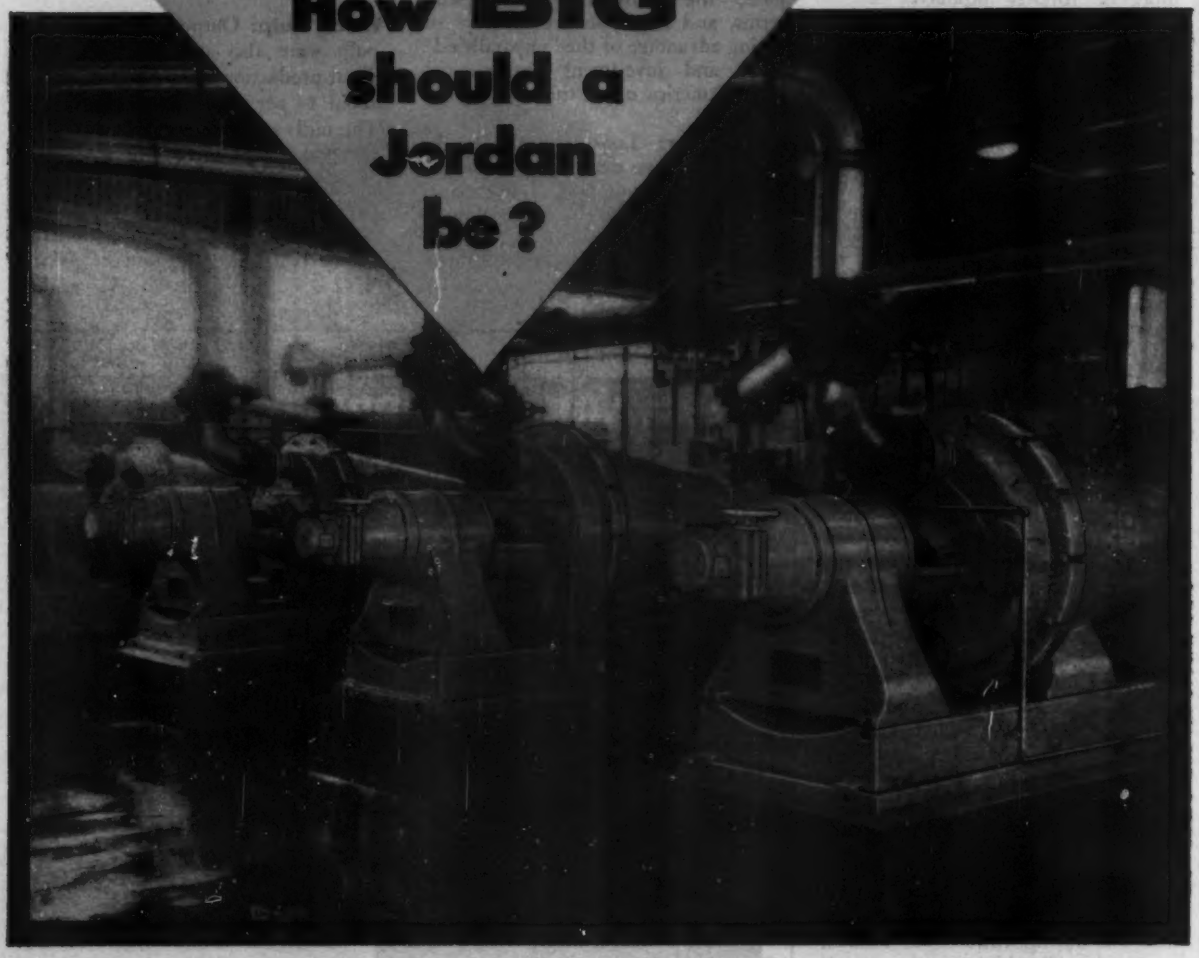

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Future policies of the Salesmen's Association of the Paper Industry were discussed prior to the group's annual luncheon by (l to r) Lawrence E. Graham of International Paper Co., retiring president; Miss Anne Toomey, secretary-treasurer, and Eugene O. Hanson of Brown Co., 1956-57 president

The annual SAPI get-together was enjoyed by Norman O. Seagrave, president of Port Huron Sulphite & Paper; Theodore Dunn, president of Dunn Paper; Howard H. Street of National Vulcanized Fibre; R. G. Macdonald, secretary-treasurer of TAPPI, and Harry E. Weston, secretary-treasurer of the Superintendents Association

tion of wood pulp has increased by 93 per cent; the increase in steel capacity during the same period was 40 per cent.

Newsprint Shortage: The shortage of standard newsprint for U. S. newspapers has resulted in increasing imports from Europe, according to Warren B. Bullock, manager of the Import Committee of the American Paper Industry. Among countries that shipped newsprint to the U. S. in January were Germany, Finland and Austria.

Sales: If past trends continue, the paper industry should double its sales to about $20 billion in the next 10 years. This according to Dr. Louis T. Stevenson, former APPA economist and now associated with Tucker, Anthony & Co. Even without inflation, he said, paper industry sales should increase by more than 40 per cent.

Foreign Trade: Last year's imports of paper and board, predominantly newsprint, rose to 5,500,000 tons. Exports, reflecting the industry's interest in foreign markets, were estimated at 850,000 tons.

Kraft Paper: In 1955 more unbleached kraft paper was produced than in any other year in the history of the industry, exceeding by more than 5 per cent the previous record set in 1951. The new record amounted to just over 2,7000,000 tons and was the result of full operations.

Abrams Calls for Expanded Research at Open Industry Meeting

THAT THE PULP and paper industry must expand its research activities was the plea of Allen Abrams, a director of Marathon Corp., as he addressed the APPA's annual Open Industry Meeting at the Waldorf. "The price of progress is research," he emphasized in a talk in which he pointed out that at present the paper industry spends less on research than American industry as a whole.

Only 10 per cent of the firms in the paper and pulp industry have research staffs of more than 10 men, Mr. Abrams continued, and it is estimated that these companies spend no more than 0.7 cents of each sales dollar on research. In contrast, the electrical machinery industry is spending at the rate of 2.7 per cent, chemicals at 2.9 per cent and drugs at

Honorary membership in the Superintendents Association is presented to Miss Anne Toomey, secretary-treasurer of the Salesmen's Association of the Paper Industry. Taking part are Howard H. Street and Harry Weston, representatives of the Superintendents

Gathered for informal discussion during the Waldorf sessions were (l to r) Earl E. Grant, president of Crystal Tissue; Reuben B. Robertson Sr., board chairman of Champion Paper & Fibre, and A. E. Bachmann, vice president and general manager of Missiquoi

4.9 per cent. "Our research expenditures fall in the category of the coal, leather and lumber industries."

Presenting a program for effective industrial research, Mr. Abrams stressed three points: (1) An analytical study of the individual situation, with manufacturers prepared to invest adequate sums over a long period both in the conduct of research and in capitalizing its results; (2) selection of a top-notch man as research director who will have a "high place" in the organization, where he will have opportunity to make use of his abilities, and (3) support for the research director and his program.

Always a highlight of the APPA convention program, the 1956 session of the Open Industry Meeting also featured talks by E. J. Gayner III, president of Brunswick Pulp & Paper Co.; George Olmsted Jr., president of S. D. Warren Co.; and A. G. Paine, vice president of New York & Pennsylvania Co. Inc.

Analyzing the recently issued *Timber Resource Review* published by the U.S. Forest Service, Mr. Gayner called TRR "a good starting point for where and how we should go; it is not a panacea." Covering the whole of the United States, he said, TRR must necessarily be very general. "We must not depend on it and its findings when planning local expansions or building new mills," Mr. Gayner declared. "Local resources, their availability and growth potentials must be considered apart."

With timber growth increasing, the speaker continued, the biggest job now is the rehabilitation of the lands of 4,500,000 land owners who possess 60 per cent of the nation's commercial timberlands. "Much assistance is already being given to the small land owners by paper and pulp industry foresters, but more should be done."

Community relations in the paper and pulp industry was discussed by both Mr. Olmsted of S.D. Warren and by Mr. Paine of New York & Pennsylvania. In introducing the subject, Mr. Olmsted reviewed the progress of the program in the five years since its inception. ". . . Much has been accomplished," he said. "An organization has been set up. People are working at the problem. Interest and enthusiasm have been kindled. A clearing house for ideas and proven suggestions is starting. But much more needs to be done. And it requires attention and support."

Mr. Paine, who is chairman of the APPA Community Relations Committee, described its activities during the past year. "Community relations," he said, "is public relations on a community level. Public relations is living right and talking about it. Better still, public relations is living right so that other people talk about you, and when they talk they say nice things."

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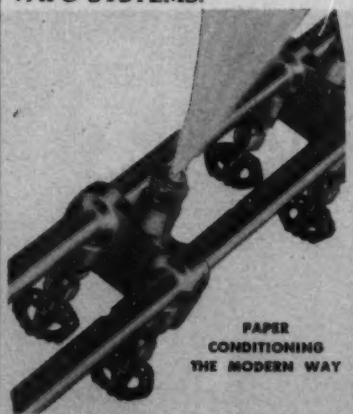

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Good Business Ahead, "Business Week" Editor Tells Salesmen

Kenneth Kramer, managing editor of *Business Week*, was the featured speaker at the annual general meeting of the Salesmen's Association of the Paper Industry at the Waldorf. He predicted one of the best years business has ever had, basing his optimism on the steady increase in gross national product, high level of employment, increased spending by consumers, city and state governments, and on the rising population rate.

Although today's predictions are based on retention of a favorable business climate and the Eisenhower administration, Kramer still doubts the possibility of either a boom or a bust in 1956.

Another speaker at the SAPI luncheon was E. W. Tinker, executive secretary of the APPA, who emphasized that the paper industry, although it is expanding and profitable, is not making exorbitant profits.

He said that although the industry will continue to grow, its rate of growth will be normal and perhaps on the conservative side.

Record highs were set in 1955 in production (29,900,000 tons), consumption (34,500,000 tons) and per capita consumption (418 lb.), he stated. This growth also took place in total assets, net worth and net sales.

Despite expansion, profits after taxes were equal to 9.9 per cent of stockholders' equity.

The Association elected Eugene O. Hanson, Brown Co., president. New vice presidents will be: Glenn R. Spicer, Hammermill Paper Co. (Pacific); William S. Wagley, Wausau Paper Mills Inc. (Western); Charles H. Leissler, Mohawk Paper Mills Co. (Eastern), and Thomas L. Stirling, Champion-International Co., (New England).

Supply and demand

(Continued from page 1105)

New Plants

As intimated previously, chlorine and caustic soda productive capacity is expected to increase significantly during 1956. In recent months, a number of new or expanded facilities have been announced. Although several of these are in the central and northern part of the country, the Gulf Coast will have the bulk of the expansion with three new plants and at least two expansions over the next 12-15 months. Since the growth of the pulp and paper industry has been predominantly in the South in recent years, the supply and demand situation in the Gulf States should remain in reasonably favorable balance.

Aside from the recently initiated production of soda ash via the carbonation of by-product caustic and some probable expansion in natural ash production, there is no increase of soda ash capacity currently anticipated.

Prices

No discussion of these three essential chemical materials would be complete without brief mention of the price situation. With continuing increases in labor rates, higher equipment and construction costs, it is inevitable that the price trends on chlorine, caustic soda and soda ash will continue upward with greater emphasis probable in the pricing of soda ash.

New results and ideas

(Continued from page 1114)

Measurement and control of moisture with Hygrotester instruments

(Paul Lippke and W. H. Rau, Hygrotester Inc.)

▶ Hygrotester instruments indicate and record moisture content not only along the web, but also across the web by means of an automatic transversing measuring capacitor.

Uniform moisture content across the sheet is important, for it permits the running of a machine at high speed since the drying section need not be utilized for over-drying the already sufficiently dry spots or for drying reserve of wet spots and streaks. Maintaining a uniform moisture content across the sheet will also keep steam consumption at a minimum and increase the selling weight of the paper considerably.

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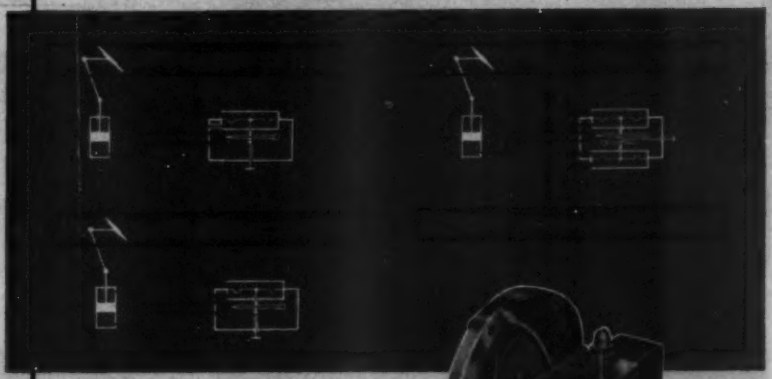

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(R. K. Churchill and N. L. Martin, Fraser Companies Ltd.)

▸ The addition of soda ash to the water used in the emulsifier and of sodium aluminate to the hot size paste will prevent the formation of insoluble rosin soap, which is a problem with mills dependent on hard water usage. The addition of sodium aluminate to the hot rosin (1) provides extra sodium ions which react with the rosin to form more rosin soap for stabilization of the emulsion, and (2) has a peptizing action on the emulsion which also results in further stabilization.

A reduction in size consumption by 30 per cent was achieved by the use of fortified rosin size. The fortified rosin, however, increased the tendency to foam formation.

▸ Premature setting of the size is caused by (1) residual alum in the beaters, (2) use of unneutralized machine white water for stock dilution, (3) residual bleach liquor in the stock, (4) hard water, and (5) insufficient beating time.

Gas in papermaking stock

(J. D. Boadway, Consolidated Paper Corp., Ltd.)

▸ Gas in the papermaking process can create foam in the headbox and interfere with the discharge process on the wire. A recent piece of equipment for gas removal is the Vorvac, a centrifugal separator running under low pressure. Gases are forced into the bubble state and separated centrifugally. Heavy dirt material is also separated centrifugally at the same time.

1955 production accomplishments

▸ The pulp and paper industry in British Columbia has been especially successful in the more complete utilization of the forest harvest. Total smallwood, salvage wood, and sawmill residue now used by the industry in B. C. accounts for more than 38 per cent of the wood used to make the industry's 1,340,000-ton output of pulp and paper products.

Announced expansion programs, even when conservatively estimated, involve the investment of more than $240 million.

▸ The production of chemical wood

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pulp in Canada in 1955 topped all previous records for the second year in a row. The output was 8 per cent greater than in 1954 and 15 per cent greater than in 1951, the previous record years. The 1955 output amounted to 4,438,252 tons as compared with 4,117,341 tons produced in 1954 and 3,864,448 tons in 1951.

▶ Groundwood pulp production in Canada set a record of 5,429,162 tons in 1955, a gain of about 2½ per cent over 1954, the previous peak year.

Most of the gain in tonnage resulted from higher levels of newsprint output, but shipments of groundwood pulp to consumers in Canada or abroad scored a more than proportionate increase.

▶ More wrapping paper was produced in Canada in 1955 than in any previous year. Output was 258,000 tons, a 5 per cent increase from the 1954 total of 246,000 tons and 2 per cent greater than the previous record output of 253,000 tons in 1951. The domestic market for wrapping paper continued strong throughout the year, while the export market showed some improvement over recent years.

▶ Paperboard output in Canada in 1955 reached an all-time high with 788,236 tons. This exceeded the 1954 and 1953 output by more than 6 per cent and the previous peak output in 1951 by some 3½ per cent. Domestic shipments were also at record levels and amounted to some 742,000 tons as compared with 691,200 tons shipped in 1954 and 688,700 tons in 1953. Exports during the year amounted to 53,363.

▶ A record output of book, writing, and coated papers was established in 1955. The previous record year was in 1954.

The demand for fine papers was buoyant throughout the year and is expected to continue so for some considerable time, hence the mills have developed expansion programs to meet the anticipated future demand. Additional capacity is expected to come into production in 1956 and 1957.

▶ The output of specialty papers during 1955 showed a marked improvement over the 1954 output. The record output was established in 1953.

During 1955 all specialty paper producers made technical and mechanical improvements in their mills which resulted in a general quality improvement in the paper manufactured. In addition, 1955 saw the successful development of several new white wrapping grades which were well received by the food packing industry.

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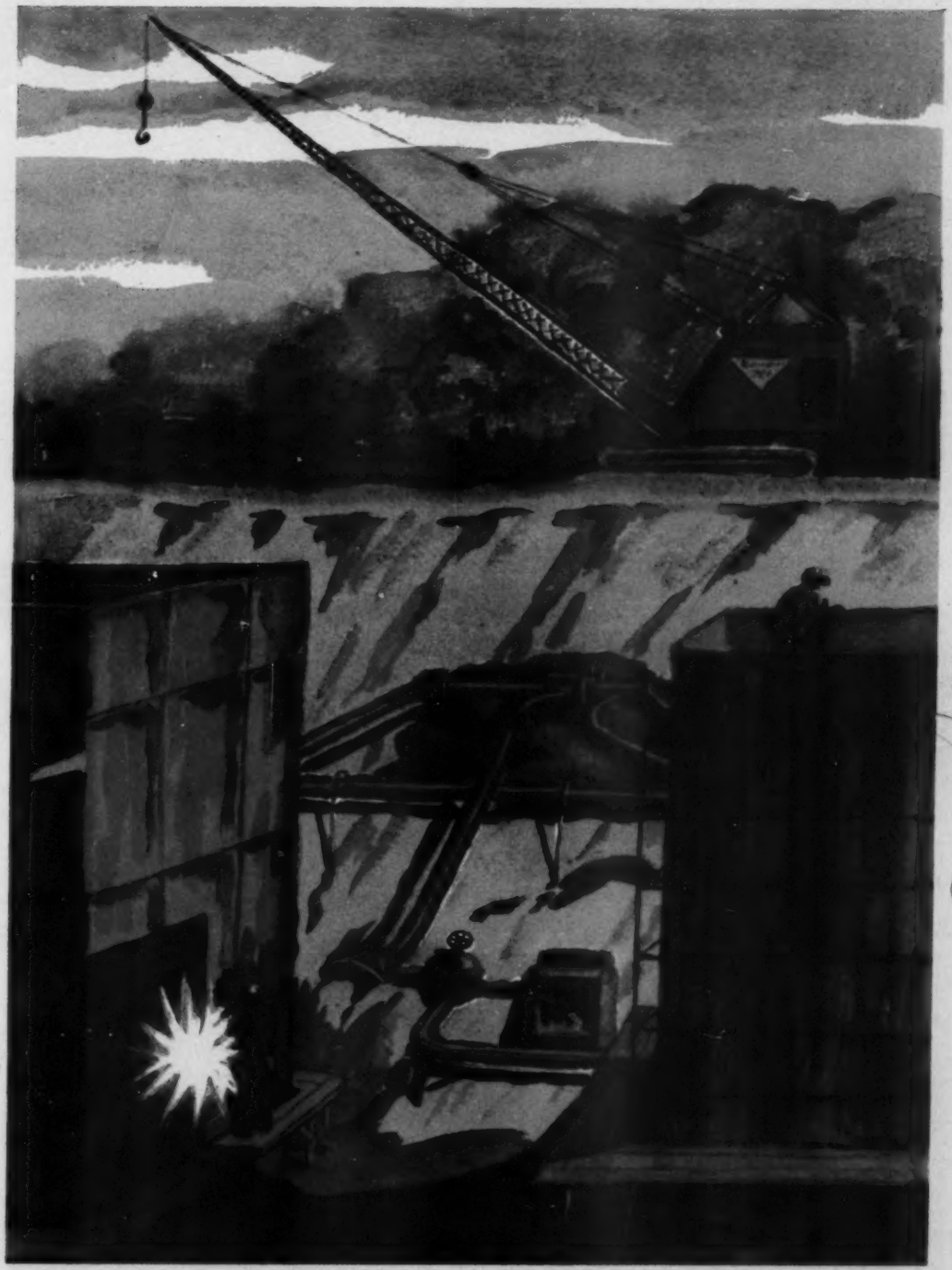

WATER COLOR PAINTING BY L. J. A. NEESE

THE FOUNDRY IS EXPANDING at Beloit Iron Works, Beloit, Wisconsin, where steel workers, shown above, are completing the assembly of the huge dryer and roll casting pits, 25 feet below the level of Rock River. Pumps and well points shown in the background control river seepage during construction. This expansion, to be completed during 1956, will provide 100,000 square feet of foundry facilities at Beloit, including a new dryer and roll casting floor, and a new core room.

CURRENT COMMENTS

Future markets . . . an election year . . . and publishers or papermakers?

Two schools of thought in the paper industry are scrutinizing the problem of future markets in view of the tremendous expansions within the industry in recent years. In some quarters it is argued that the industry, because of heavy demand, has begun to reach the point of excess capacity. The other argument is that the United States is now the greatest center of paper and paper production in the world, but that its output is justified by the fact that world demand is growing more rapidly than can be met by present world-wide productive machinery.

Prices have continued to strengthen in recent weeks, despite efforts by purchasers to resist the upward trend. But in the face of present demand there is little likelihood that 1956 production will fall below the record-breaking tonnage of 1955. It is not likely that the percentage gain in 1956 over 1955 will equal the 1955 gain over 1954, but even an increase of 7 per cent over 1955 is not impossible.

The fact that 1956 is an election year may have a direct effect on general business. Witness the drop in securities markets following the President's heart attack as an indication of what may happen in the business world. Wall Street usually anticipates general business conditions — when the market specialists guess right. The first 10 days of February saw a renewed assault on stock prices with the uncertainty of the President's plans to run for reelection. It should not be so, perhaps, but the fact is there.

Labor's share of earnings

The early months of 1956 have seen detailed income reports from most sections of the industry. The prosperity in earnings has been unexampled but is not likely to continue at a similar rate. The labor leaders are studying these income reports as cannily as stock market operators. It is not unlikely that labor may demand a bigger share of paper mill earnings, which would reduce net income of the mills and consequently leave less money available for distribution to stockholders. In other words, labor is thinking in terms of its share of the earnings pie.

It takes know-how

There is a new trend apparent in some quarters in the minds of magazine publishers. Some appear to be learning the lesson taught to some newspaper publishers years ago that it takes a paper mill man to make paper at a profit. Such publishers as Hearst and the old *New York World* dropped mill operations, and the publications which still own mills are those which have had the foresight to couple their ownership with the know-how of operating paper mill men. The *Chicago Tribune* and the *New York Times* are cases in point. The formation of publisher pools in various sections to unite in financing newsprint mills is indicative of this realization that the shoemaker should stick to his last. Perhaps this is a reason why *Time* is considering acquiring Houston Oil Co.'s 50 per cent interest in Eastern Texas Pulp & Paper Co., in which Time already has a stock interest of over 10 per cent.

The furor over rising newsprint prices is not over. Quebec has passed legislation to protect Quebec publishers from newsprint price increases. While the newspapers are crying to heaven against the increase in prices of newsprint, recent income statements of some major newspapers show unprecedented profits. Admitting this may not be universal, it is evidence that newsprint shortage and prices are not a universal cause of red ink in newspaper ledgers.

Financial Reports

Renewed fears that Mr. Eisenhower may decide against a campaign for his reelection gave the securities markets a new blow the first week in February. Paper mill issues suffered somewhat, though it was perhaps symptomatic that offerings dried up. Owners, apparently, have confidence in the industry, and reduced prices for common stocks in many cases were paired with increased prices for preferred issues.

Net Incomes

Charmin Paper Mills Inc.—Net income for six months ended October 31 was $690,755 as compared with $507,529 in that period a year ago.

Hudson Pulp & Paper Corp.—Net income for the year ended August 31 was $2,285,633 as compared with $2,312,314 in the previous fiscal year.

Stock and Bond Quotations

New York Stock Exchange — Stocks

Closing Prices	Feb. 9, 1956	Jan. 10, 1956
A.P.W.	*4¼-4½	*4½-4⅝
Celotex	34⅛	34⅜
Same Pref.	*19⅜-20	19⅛
Certain-Teed	22⅝	24⅜
Champion P & F	61¼	60
Same Pref.	*106-107	*104½-105½
Chesapeake Corp.	*63-64	*66¼-67¼
Container Corp.	74¾	74¾
Same Pref.	102	*104-105
Crown Zellerbach	55½	56½
Same Pref.	103¾	*102¼-103¾
Dixie Cup	53	55½
Eastern Corp.	27⅛	29⅛
Federal Paper Board	30¼	31¼
Robert Gair	30¼	23¼
Same Pref.	109	107¾
Great Northern	97	95¾
Hammermill	38	37⅛
International	109	112½
Same Pref.	*105¼-106½	*103-104
Kimberly-Clark	45⅜	45⅛
MacAndrews & Forbes	44¼	48½
Marathon	35¾	33⅞
Masonite	35⅝	36¾
Mead Corp.	71	70
Same Pref.	*101-102½	*102-102¾
Same Sec. Pref.	*79-84	*78-82
Minnesota & Ontario	67¼	66½
National Container	22⅞	22
Same Pref.	39¾	38¼
Oxford Paper	36⅜	36½
Same Pref.	100½	101
Rayonier Inc.	36¾	40¾
Rhinelander	39⅜	39½
Scott Paper	67½	67⅞
Same $3.40 Pref.	*92¾-93¼	95
Same $4.00 Pref.	*104-105¼	*103½-104
St. Regis	41⅛	42½
Same Pref.	*104-105½	*102-103
Sutherland	46¾	47
Union Bag & Paper	95	97
United B. & C.	22¾	24
United Wallpaper	2	2⅛
Same Pref.	*19⅛-21⅛	21
U. S. Gypsum	55⅜ (New)	290½
Same Pref.	*179½-182	179
West V. P. & P.	44⅜	46
Same Pref.	*106¼-107⅜	*106-107½

New York Stock Exchange — Bonds

A.P.W. 5%	—	80½
Celotex 3¾%	—	—
Champion P & F Co. 3¼%	—	—
Mead Corp. 3%	—	—

American Stock Exchange — Stocks

American Writing	20	—
Brown Co.	18⅛	19⅛
Puget Sound	70	68

*Closing Bid and Asked Prices

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DAVENPORT PRESSES...for dewatering pulp and paper stock to high densities.

DEFIBRATOR BARK PRESSES...for reducing moisture content of wet bark to 55% or less, for use as fuel.

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NEWS of the INDUSTRY

WET END OF No. 1 paper machine at Johnsonburg, showing new stainless-lined mixing box and head box

FOURDRINIER and press section of rebuilt No. 1. New Jones stock screens and a Beloit inlet have been added

DRIVE SIDE of the machine. Electrical controls have been modernized for better regulation and higher speed

DRYER SECTION showing hoods. Six new Beloit dryers were installed. The machine now trims to 181 in.

New York & Pennsylvania Rebuilds Machine to Improve Efficiency

TO STEP UP production and to achieve further improvements in the quality of its magazine press paper, New York & Pennsylvania Co. Inc. has recently rebuilt and completely modernized the No. 1 paper machine at Johnsonburg, Pa. Cost of the project was $474,000.

Speed of the No. 1 unit has been increased from 450 fpm to 650 fpm, while output has been boosted 62 per cent — from a daily 90,000 lb. to a daily 146,000 lb.

More important, according to the firm, finished paper now has improved formation, greater strength, better surface and exceptional cleanliness.

No. 1 unit, originally built by Beloit Iron Works, has been equipped with new mixing and riffle boxes. Both are lined with stainless steel, producing greater cleanliness in the finished product, as well as smooth level flow.

Stock screens supplied by E. D. Jones & Sons Co. have replaced the old screens, and a new Beloit inlet has been added. In addition, five new table rolls have been installed.

The effective forming area on the fourdrinier has been lengthened by a level wire running from the breast

THE FLOODED Willamette River and Willamette Falls attack the West Linn, Ore. mill of Crown Zellerbach Corp.

FLOODED No. 3 grinder room at West Linn, where the water reached a depth of more than 5 ft., forcing shut-down

Floodwaters Take Toll In Northwest Area

A shortage of newsprint faced Portland, Ore. newspapers early this year because of floodwaters that either stopped or curtailed operations at two nearby paper mills. Hardest hit were the Crown Zellerbach Corp. mill at West Linn and Publishers' Paper Co. at Oregon City. The latter firm was reduced to 60 per cent of capacity.

In a report to THE PAPER INDUSTRY, S. S. Philbrick Jr. of CZ public relations at San Francisco described the West Linn damage:

"The flooding Willamette River, at its highest stage in 22 years, caused the West Linn mill to stop all operations on December 23. The mill had been shutting down progressively since 3 pm on the 22nd, when high water first entered the mill grinder rooms and cut off six paper machines from groundwood pulp supplies. Machines manufacturing newsprint were kept running as long as possible, but finally on December 23 high water in the paper mill basement forced the mill's remaining four machines to be shut down.

"The river at its peak stage on December 24 reached an elevation of 67.3 ft. at the upper river guard locks and 41.3 ft. in the lower river. The water covered the grinder room floor to a depth of more than 5 ft. and flooded most of the mill basements.

"As water receded, normal operations were resumed as quickly as possible.

" 'The real story of the flood,' said Don Osborne, West Linn personnel supervisor, 'is the skill, experience and knowledge displayed by the employees and supervisors.

" 'Every ounce of production possible was squeezed out of the machines as a result of the careful planning and coordinating of shut-down and start-up . . . the securing of the mill against flood damage, removal of hundreds of electric motors, the moving of tons of paper stock. . .' "

---

roll to the couch roll. There is a pneumatic guide roll in the return of the wire. A suction first press has also been installed.

Gear units on the drives for the various sections have been replaced. And the electrical control system has been completely modernized for better regulation and higher speed.

Drying Efficiency Increased

Six new Beloit dryers have been installed. Four are paper dryers, while two are felt dryers.

A complete air system and hood have been installed by Jamar-Olmen Co. of Chicago. The hood is equipped with exhaust fans, and the inlet air system is complete with heaters and filters for improved drying operation.

Design of the winder has likewise been improved. A new center wind reel has been added, and the winder has been modified and rebuilt for faster, more efficient operation.

No. 1 machine now trims to 181 in. With the exception of the hood and air system, which were installed by Jamar-Olmen, the rebuilding and modernization project at Johnsonburg was entirely accomplished by mill maintenance crews.

Vast Expansion Project Underway at Brown Co.

A $17,000,000 plant addition, rehabilitation and improvement program in the Brown Co. mills at Berlin and Gorham, N. H., is underway. The announcement was made by A. E. Harold Fair, president of the firm.

"Our new chlorine dioxide plant," he said, "will be the first of its kind on the North American continent. While Brown's new sulfite waste liquor recovery system will be the first of its kind in the eastern United States."

Fair listed nine additional projects that are underway: a new kraft pulp bleachery, sulfite pulp indirect cooking systems, additional chip handling capacity, additional storage for the kraft pulp mill, a new kraft raw stock screening system, new pulp finishing and shipping facilities and a 7500-kw turbine generator.

Also listed in the president's report were seven other construction projects that are "being planned or considered" as further additions to Brown plants in the area. These are: additional paper machine capacity, additional pulping capacity, a new wood-handling system, refuse burning and steam generating equipment, a furfural plant and a resin plant.

International May Build West Coast Mill

International Paper Co.'s recent negotiations for acquisition of Long-Bell Lumber Co. are thought to be part of a long-range plan whereby the world's largest paper manufacturer seeks to establish its first pulp and paperboard mill on the Pacific Coast.

According to the *Wall Street Journal*, paper industry sources speculated that if the acquisition is approved International can draw on Long-Bell's

vast West Coast timber resources to manufacture pulp and paperboard. Construction of a mill for this purpose would dovetail with International's present West Coast operations.

Long-Bell owns nearly 3 billion bd. ft. of timber, of which 73 per cent is located in Oregon. The remainder is in Washington, California and several southern states. The holdings in the South might be used for International's pulp making facilities in that area.

Georgia-Pacific Enters Paper Field

Georgia-Pacific Plywood Co. is entering the paper producing industry through the formation of a wholly-owned subsidiary, Georgia-Pacific Paper Co., with headquarters in Portland, Ore.

A kraft paper and paperboard mill will be built near Toledo, Ore., with an annual production capacity of 90,000 tons.

H. Stuart Daniels will head the new company, having resigned as executive vice president and general sales manager of Union Bag & Paper Corp. He is currently president of the Kraft Paper Association.

The new mill will utilize waste materials from the parent company's logging and manufacturing operations. Long term plans also include study of a proposed pulp mill at Juneau, Alaska.

Crystal Tissue Orders B-C Fourdrinier

Crystal Tissue Co. of Middletown, Ohio, will install a Black-Clawson fourdrinier machine, according to a recent announcement by E. E. Grant, Crystal president. The installation date has been set for mid-1957.

The equipment, now on order from B-C's Hamilton, Ohio works, will increase Crystal's annual tissue tonnage output by 25 per cent. In making the announcement, Mr. Grant said in part, "Our investment in this new fourdrinier represents the largest single capital expenditure ever made in the history of the company . . . Since 1951 we have improved and expanded our production, storage and shipping facilities for both the tissue and the waxing operations, and only last year we installed a new steam generator that has increased our steam power capacity by 160 per cent and is more than adequate to take care of the immediate future plant expansion, including the new paper machine."

CZ to Build at Antioch, Cal.; Buys Waxide Paper

Sale of Waxide Paper Co.—with plants in Kansas City and St. Louis, Mo.—to Crown Zellerbach Corp. of San Francisco has been announced by Johnson County National Bank & Trust Co. of Prairie Village, Kans., trustee.

At the same time, it was announced that CZ will build a corrugating and container manufacturing operation adjacent to its kraft paper mill now under construction at Antioch, Cal. The new unit, expected to cost $2,500,000, will mark Crown Zellerbach's entry into container manufacturing on the Pacific Coast.

A 175,000-sq. ft. building will be constructed to house an 85-in. corrugating machine and other container manufacturing equipment. The plant is expected to be in operation by early 1957.

In the Waxide Paper Co. sale, trustees announced that the sale was made to CZ because that company

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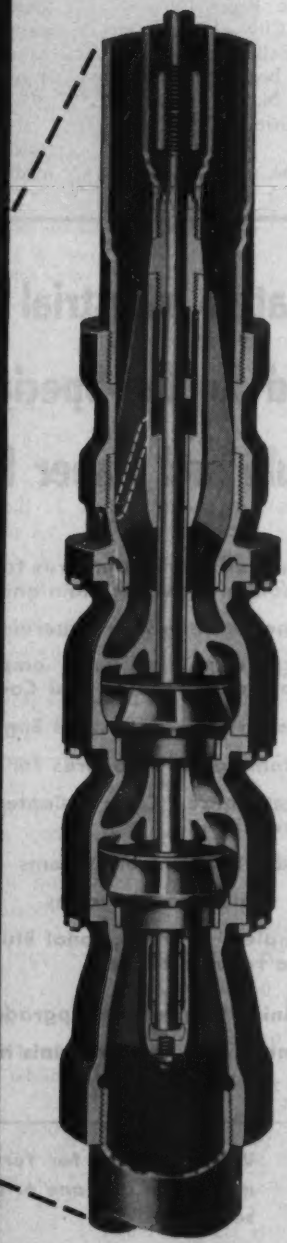

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LAYNE
& BOWLER, INC.
MEMPHIS
General Offices and Factory

LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD

is capable of developing and diversifying Waxide's facilities. The firm's 1955 sales approximated $9,000,000. It is principally a converter of waxed papers into bread wrap and other specialty packaging for the Midwestern market.

Union Bag's Newsprint "Outlook" Called Good

Prospects for the entry of Union Bag & Paper Corp. into the production of newsprint seem to be more firm, according to Donald J. Hardenbrook, vice president of the Savannah, Ga. company. Mr. Hardenbrook spoke at a recent meeting of the Financial Analysis Association in Philadelphia.

Union Bag & Paper announced several weeks ago that it was studying the prospects of newsprint manufacture. And while company directors have not acted formally, it appears that the facility will be built somewhere in the South.

According to Mr. Hardenbrook, Union Bag is in the process of exploring plant sites. He noted, however, that it requires about three years to get a newsprint mill into operation.

Doeskin Controlled by Swan-Finch Oil Corp.

Controlling interest in Doeskin Products Inc. has been acquired by Swan-Finch Oil Corp. of New York, N. Y. The transaction involved an exchange of 2½ shares of Swan-Finch for each share of Doeskin, and the oil firm is now the owner of 200,000 of Doeskin's 470,000 common shares outstanding.

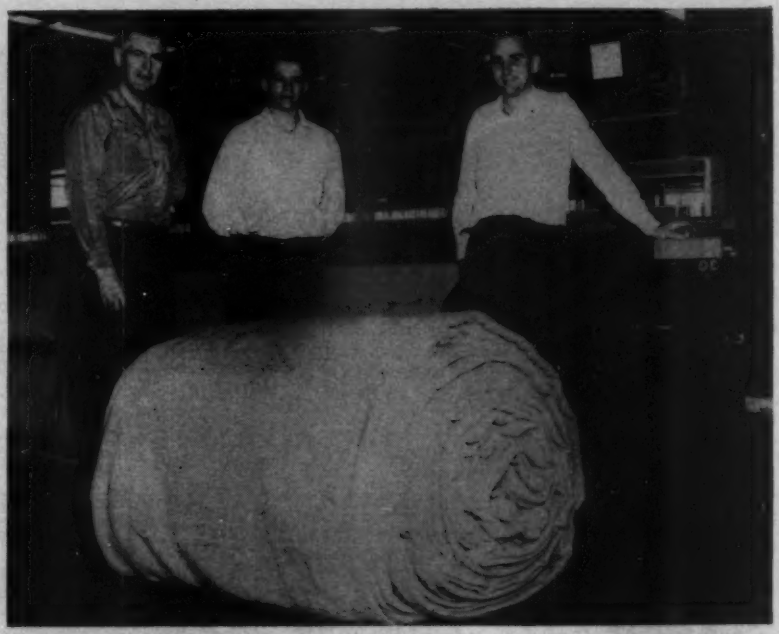
Doeskin produces and distributes cleansing and bathroom tissues, sanitary and table napkins and cellulose products. The firm's subsidiaries, purchased outright in 1954 for $2,000,000, are Sitrue Inc., Sterelik Inc., and Superfine Paper Mills Inc. Its headquarters are in New York, N. Y., with five plants located in the states of Massachusetts, Delaware and New York.

Pacific Coast Paper in $1,500,000 Expansion

A $1,500,000 plant expansion has been announced by Pacific Coast Paper Mills of Washington Inc. at Bellingham, Wash. The majority of the expansion capital will be devoted to the purchase and installation of a new paper machine to turn out tissues.

According to F. J. Herb, president of the firm, it is expected that the new machine — now being built by Beloit Iron Works — will be in operation by the end of the year. Its addition will bring the total number of machines at the mill to four. "We expect the extra tonnage from the new machine to increase production by 40 to 50 per cent," he said.

During the past six years, the company has invested $2,000,000 in new buildings and equipment. The third paper machine was installed in a new building in 1950, a converting building was constructed in 1952, and last year new office facilities were provided.



FIRST PAPERMAKERS felt ever to be produced in a southern mill was turned out in January at the new Starkville, Miss. plant of Lockport Felt Co. Shown here with the 278-lb. wet felt engineered for Southern Paperboard Corp. at Port Wentworth, Ga., are (l to r) Raymond J. Capen, general manager, and Richard Quinn and Burney J. Walker, weavers

Two Firms Announce New Departments

Donald Schultz

Two paper manufacturers have recently announced the formation of important new departments in their respective organizations. Oxford Paper Co. of Rumford, Maine, has established a Technical Specialties Group within the Research and Development Department. The group is to be under the direction of Dr. William H. Hoge. At the same time, Charmin Paper Mills Inc. of Green Bay, Wis., revealed the organization of a research and development department and the promotion of Donald Schultz to the post of research director.

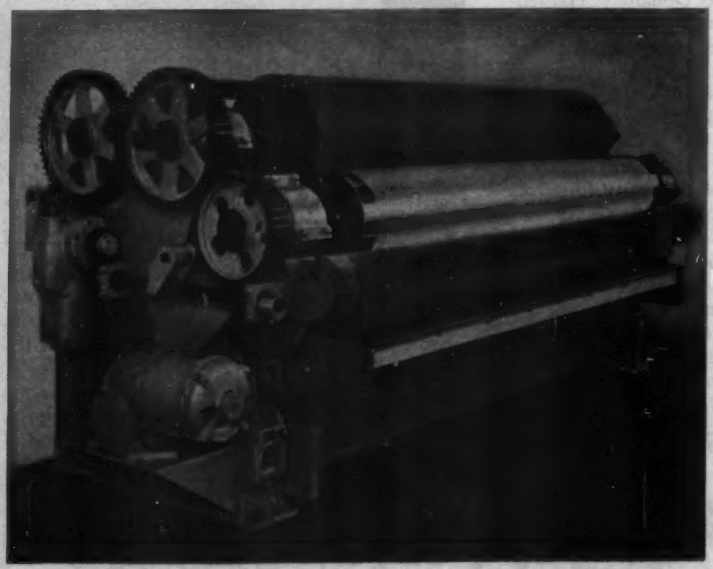
A member of Charmin's laboratory staff since August 1949, Schultz was formerly engaged in laboratory research.

The new Oxford group will de-

30½-TON DIGESTER tank recently received at Bowaters Southern Paper Corp. in Calhoun, Tenn., is moved by a 45-ton Lorain crane from railroad siding to the installation site

Egan

OFFSET GRAVURE PRINT COATER



Designed for use in paper machine groups, the Offset Gravure Print Coater, clay-coats paper and paperboard at full paper machine speeds.

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vote its full time to product development and diversification. The position of group leader for fundamental research, formerly held by Dr. Hoge, will be filled by Dr. Victor Mattson, who has recently joined the Oxford Research and Development Department. A graduate of the Institute of Paper Chemistry, Dr. Mattson came to Oxford from the Research Department of the Mead Corp.

Pulp, Paper Production Breaks All Records, Commerce Dept. Reports

Paper and board production during 1955 totaled 29,896,748 tons, while at the same time wood pulp production amounted to 20,829,730 tons. These preliminary figures, which were reported recently by the United States Department of Commerce, represent all-time high levels.

U. S. Paper and Board Production
(Tons of 2000 lb.)

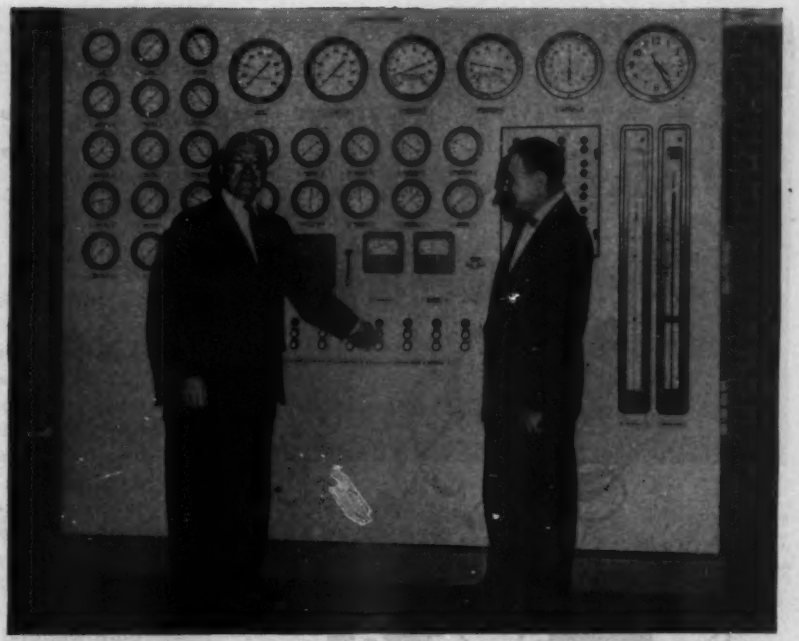
	1955*	1954*
All Types, Total	29,896,748	26,656,631
Paper, total	12,826,496	11,614,655
Newsprint	1,458,373	1,191,760
Groundwood paper	890,761	807,980
Paper machine-coated	1,290,197	1,215,243
Book paper	1,689,971	1,559,577
Fine paper	1,453,843	1,323,944
Coarse paper (incl. shipping sack)	3,715,783	3,428,608
Special industrial paper (incl. absorbent)	642,348	526,209
Sanitary tissue	1,430,993	1,320,353
Tissue paper (except sanitary and thin)	254,277	240,981
Paperboard, total	13,749,273	12,046,923
Liners	5,096,433	4,335,658
Corrugating material	2,167,579	1,816,530
Container chip and filler board	285,934	280,062
Folding boxboard	2,643,984	2,484,725
Special food board	1,049,811	941,035
Other bending board	294,571	245,424
Set-up boxboard	781,153	710,302
Other non-bending board	231,898	209,762
Special paperboard stock	1,106,844	944,198
Cardboard	91,066	79,227
Wet machine board	151,321	132,114
Construction paper and board, total	3,169,658	2,862,939
Construction paper	1,519,662	1,355,941
Hardboard (density over 26 lb./cu. ft.)	535,023	493,258
Insulating board (density 26 lb. or less/cu. ft.)	1,114,973	1,013,740

*Preliminary

Paper production was 10 per cent above the 11,614,655 tons reported in 1954, increases coming in all major grades. Paperboard output in 1955 amounted to 13,749,273 tons, 14 per cent more than the 12,046,923 tons in 1954.

Production of all major grades of wood pulp was substantially higher than in 1954. The largest tonnage increases were posted in the bleached and unbleached sulfate, groundwood and semichemical grades.

Consumption of wood pulp increased 13 per cent to 21,484,032 tons. Consumption of fibrous materials other than wood pulp increased 11 per cent to 10,293,563 tons. The consumption of pulpwood amounted to 33,332,011 cords (roughwood basis), an increase of 13 per cent over the previous year.



OFFICIAL START-UP of the new steam turbine and electric generator recently installed at the Rumford, Maine plant of Oxford Paper Co. The addition, along with auxiliary equipment, represents an investment of more than $1,250,000. The turbine takes steam at 400 psi from Nos. 1 and 2 boilers and drives a 12,500-kw 60-cycle electric generator. After use for turbine operation, part of the steam is extracted at 60 psi and is piped to various mill departments for use in paper processing. Participating in the start-up ceremonies are Donald Appleton (l), Oxford's vice president for manufacturing, and H. Paul Petzold, mill manager

St. Regis Makes Offer to Rhinelander Holders

St. Regis Paper Co. has confirmed an announcement made recently by Folke Becker, board chairman of Rhinelander (Wis.) Paper Co., that St. Regis intends to make an offer of exchange of St. Regis common stock for Rhinelander common on a share-for-share basis.

This offer of exchange was to be persuant to a printed prospectus that forms a portion of the registration statement which must be filed by St. Regis with the SEC. According to a St. Regis announcement made February 2, the offer was to be made promptly after the St. Regis registration statement became effective.

Rhinelander is engaged in the manufacture of glassine and greaseproof paper and supercalendered sulfite paper used principally in protective food wrapping and packaging. The firm's net sales for the fiscal year ended September 30 were $21,643,880, with net earnings of $1,628,975.

Brown to Install Pandia Experimental Digester

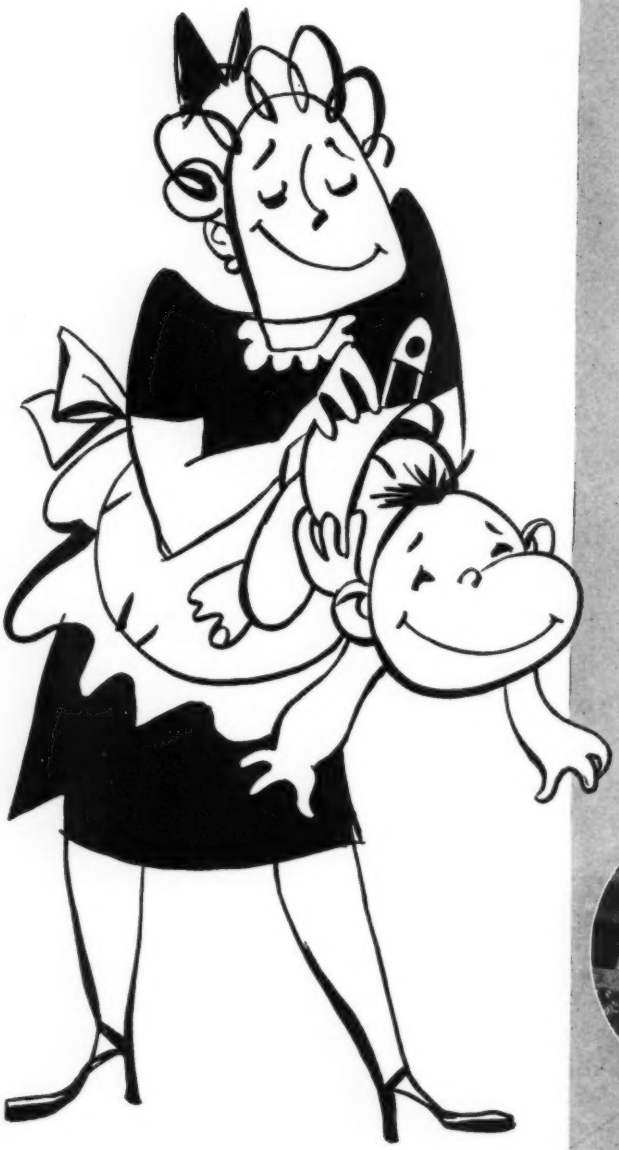
Brown Co. and the Black-Clawson Co. have revealed plans to install an experimental Pandia continuous digester at the Brown mill in Berlin, N. H. The unit will be managed on a cooperative basis.

The digester will supplement the existing Brown pulp and paper pilot plants and will provide for greater flexibility. It will be possible to experiment with any type of cellulosic raw material.

The existing pilot plant facilities at Berlin consist of an all-stainless steel pulp plant, with a 500-lb. digester and supplementary blow

How the Hurletron

CORRECTS WET END DIFFICULTIES

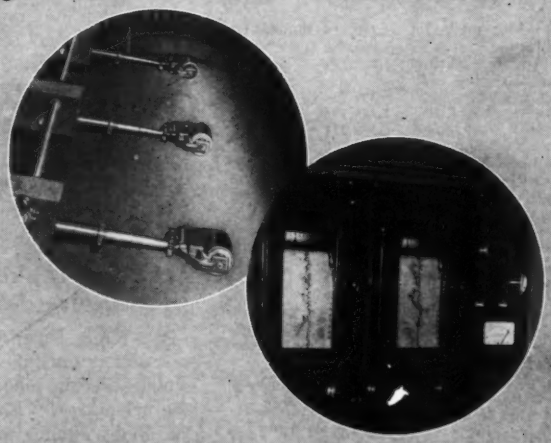


Here's a device that stops trouble before it starts. At the wet end it keeps an eagle eye on the infant sheet as it is formed . . . carefully gauges its thickness at center and each edge . . . detects the slightest variation in caliper. It takes no action if the fluctuations are momentary. But the instant there is indication of an out-of-caliper trend, you see action. Stock flow is regulated . . . increased or decreased . . . and the sheet is quickly brought back into caliper. Result: Wet end fluctuations are held to plus or minus one point. And the entire operation is automatic. Furthermore, your Hurletron gives you a complete written record of caliper at both wet and dry ends.

Advantages? Time saved . . . money saved . . . labor saved . . . waste reduced . . . and, of course, a better, more uniform product. That's why Hurletrons always pay for themselves . . . quickly . . . through direct savings.

Want details? Write, wire or phone.

HURLETRON
Automatic
CALIPER and WEIGHT
CONTROL



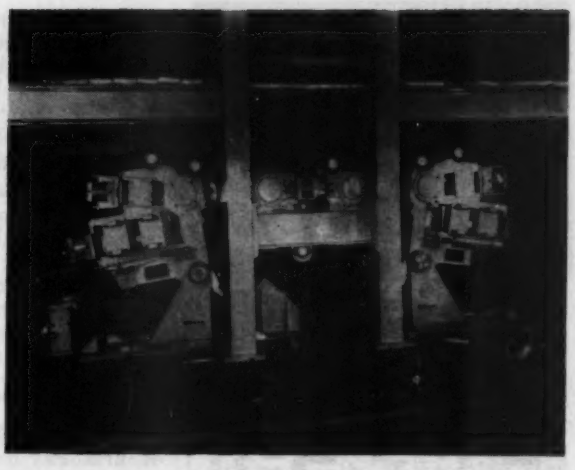
ELECTRIC EYE EQUIPMENT COMPANY

1936 East Fairchild Street • Danville, Illinois

Manufacturers of: Hurletron R.O.P. Color Registration Controls; Automatic Controls of Caliper and Weight on Paper and Board; Center Line and Side Web Guide Controls; Cut-Off and Back-Up Controls; Slitter Controls; Moisture Controls.

tank, screens, purification and bleaching towers, an Improved Machinery Co. midget vacuum washer and a 40-in. fourdrinier paper machine with its supplementary beating room.

The digester pilot plant is to be made available to the pulp and paper industry on a part-time basis, while other Brown pilot plants and laboratory facilities may also be opened to outside use. Announcements in this regard will be made at a future date.



HIGH-SPEED experimental clay coater recently installed by West Virginia Pulp & Paper Co. for pilot plant operation on 54-in. web widths at paper machine speeds. The Dilts (Black-Clawson) unit includes a constant tension running belt unwind, Dilts coater, Red-Ray burners, B-C 48-in. dryer section with enclosed gearing, and a B-C Rollflyte reel. The drive is by General Electric

Recent Expansions in the Industry

Container Corp. of America
has approved a plan for exchange of its common stock for the common shares in the Mengel Co. not presently held by Container Corp. The offer is to be conditioned upon the acquisition by Container Corp. of enough Mengel shares to bring its holdings to at least 90 per cent of the total outstanding. However, Container Corp. will reserve the right to accept a smaller amount provided its holdings of Mengel will not be less than 80 per cent.

Hammermill Paper Co.
plans the construction of a multi-million dollar pulp and paper mill near Franklin, Pa. The Erie firm has indicated that it will purchase a 77-acre site at a cost of $50,000. The "Neutracel" process will be used in paper manufacture.

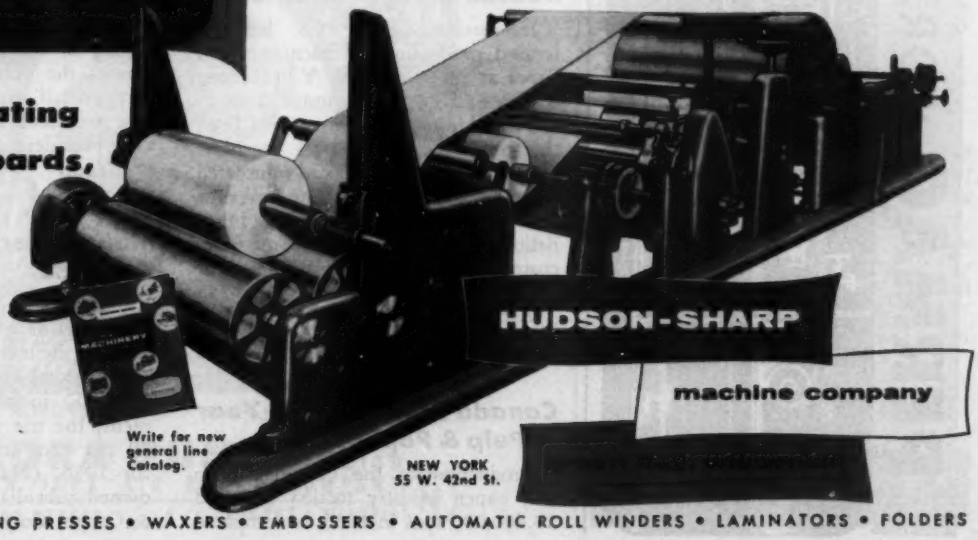
Rayonier Inc.
will build a $3,250,000 wood chipper plant at Hoquiam, Wash. Located adjacent to the Rayonier pulp plant, the new operation will be equipped to handle logs up to 30-in.

H. S. Heavy-Duty
multi-purpose
LAMINATOR

For laminating papers, boards, films and foils with pastes, glues and asphalts

Better Bonding...Greater Productivity

Modern, practical and efficient, the GL-2 Gummer and Laminator is designed so that each operating assembly can be changed to handle the ever-growing list of hot or cold laminants and materials — and insure a perfect coating or bond with them. Completely flexible, this machine can be re-arranged for longer sheet leads... new assemblies can be added... or old ones subtracted. Standard unit, built 30 to 90 inches wide, is equipped with applicator and dryer for hot or cold laminants. An additional applicator for asphalts may be added — complete with by-pass provisions. Rewinders and backstands of various types can be furnished. Write for complete details.



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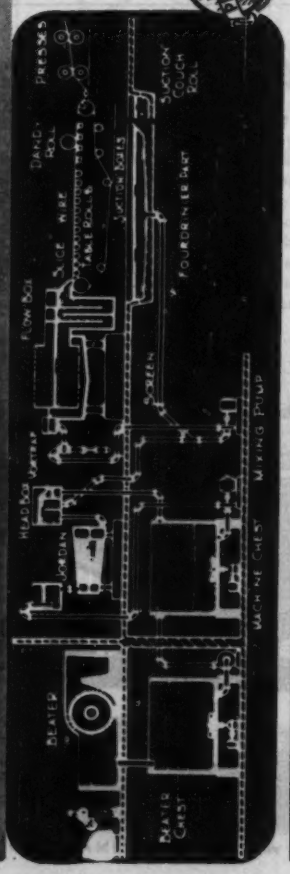
For every cleaning need there is a PERMAG CLEANING COMPOUND—production proven in extensive use for top efficiency, economy and reliability under all conditions.

More than 30 years of development and service in superior cleaning compounds warrant your investigation of these widely approved PERMAG products.

Write for FREE 16-page handbook: PERMAG Cleaning Compounds for Paper Mills

MAGNUSON PRODUCTS CORPORATION
50 Court Street • Brooklyn 1, N. Y.
In Canada: Canadian PERMAG Products, Ltd., Montreal



diameter, as contrasted to the present 18-in. maximum. Completion is scheduled for the late spring of 1957.

Antler Wood Products Ltd.

of Edmonton, Alta., has proposed the construction of a $20,000,000 pulp mill for the Whitecourt area of the province (110 miles northwest of Edmonton), according to an announcement by N. A. Wilmore, provincial lands and forests minister.

Hammermill Paper Co.

of Erie, Pa., has completed its acquisition of Watervliet Paper Co. of Watervliet, Mich. The Michigan plant will be operated as a Hammermill division. According to spokesmen for the firms, the transaction was on the basis of 26 shares of Hammermill for each 25 shares of Watervliet.

Charmin Paper Mills Inc.'s

recent purchase for $600,000 of the idle Paper Corp. of America mill in Cheboygan, Mich., has been upheld by a federal judge in New York, N. Y. A principal stockholder in the Michigan firm had asked that the sale be set aside on the basis of an inadequate purchase price.

Keiding Paper Products Co.

of Milwaukee has constructed a 15,000-sq. ft. building in Lebanon, Pa.

International Boosts Hudson River Production

International Paper Co. has increased production of machine-coated paper at its Palmer, N. Y. (Hudson River) mill by 35,000 annual tons.

The additional capacity results from the conversion of No. 3 machine, which formerly produced uncoated groundwood specialties. The mill now has three machines producing International's two grades of machine-coated paper at an annual rate of 100,000 tons.

According to the firm, the conversion of No. 3 cost $1,750,000.

Canada Records Peak Year in Pulp & Paper Output

Production of the Canadian pulp and paper industry totaled a record 10,400,000 tons in 1955, as compared

News of the Industry . . .

with 9,900,000 tons in the previous year, according to a statement by R. M. Fowler, president of the Canadian Pulp & Paper Association.

There was a satisfactory increase in demand in practically all grades of pulp and paper, and for newsprint the demand was so great that mills could not fill customers' requirements. Printing papers account for ¾ of the output of Canadian mills, but the industrial uses of wood fiber in North America far outweigh its cultural use. This continent's output of industrial papers and paperboard in 1955 was twice that of printing papers of all types.

Mr. Fowler also said that pulp and paper is the largest single creator of Canadian wealth and last year accounted for 24 per cent of Canada's exports.

Dorr-Oliver Acquires Merco

Dorr-Oliver Inc. has acquired all the business and substantially all the assets of Merco Centrifugal Co. in exchange for approximately 50,000 D-O common shares.

Merco, with headquarters in San Francisco, is engaged in the manufacture and sale of centrifuges, centrifugal screens and strainers.

Heppenstall Buys Midvale

The assets of Midvale Co., manufacturer of forged steel products, have been purchased by Heppenstall Co. of Pittsburgh.

The newly formed Midvale-Heppenstall Co. will operate as a subsidiary of the parent concern. Officers of the new firm include: R. B. Heppenstall, president; J. P. Roche, vice president, and H. W. Davidson, vice president and assistant to the president.

Manchester Machine Expands

Manchester Machine Co. has begun a major expansion program involving an increase of about 45 per cent in total employment, more than $200,000 in new tools and equipment, the use of more space and a 50 per cent increase in production for 1956. (Manchester is a wholly owned subsidiary of Gardner Board & Carton Co.)

Triggering the announcement was the signing by Manchester of a contract to build a paper machine for a large eastern firm. The unit is scheduled to be delivered early next year.

DuPont Starts New Unit

The start-up of a new unit in Niagara Falls, N. Y., that will double the production of "Elvanol" polyvinyl alcohol has been announced by the Electrochemicals Department of E. I. duPont de Nemours & Co.

The plant turns out five major grades of polyvinyl alcohols that are used in the manufacture of adhesives, as textile sizes and finishes, paper sizes and coatings, in synthetic sponges and in various specialty films.

Norelco Handles Hart Line

The Research and Control Instruments Div. of North American Philips Co. is now exclusive distributor in the United States, Alaska, Hawaii and Puerto Rico for the complete line of Hart high-pressure equipment.

Manufactured in Rotterdam, the Netherlands, in collaboration with a continuing research program at the University of Amsterdam, Hart equipment is basically designed for the generation and accurate measurement of pressures up to 10,000 atmospheres for experimental use in physical and chemical laboratories.

Coming Events

Tappi

March 23—Lake Erie Section, Mill Visits, Steubenville, Ohio
March 23-24—Southeastern Section, Roosevelt Hotel, Jacksonville, Fla.
March 29—Delaware Valley Section, Engineers Club, Philadelphia
April 4—Empire State Western District, Prospect House, Niagara Falls, N.Y.
April 6—New England Section, Roger Smith Hotel, Holyoke, Mass.
May 7-9—Coating Conference, Benjamin Franklin Hotel, Philadelphia, Pa.

American Pulp & Paper Mill Superintendents Association

March 15—Michigan Division, Hotel Harris, Kalamazoo, Mich.
March 22—Northwestern Division, Appleton, Wis.
March 23—Miami Valley Division, Manchester Hotel, Middletown, Ohio

Other Meetings

April 9-11—Annual Meeting of The National Paper Trade Association, Waldorf-Astoria, New York, N.Y.

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• Edited by GEORGE BLACK

AKH #3 NOW AVAILABLE

How to maintain close dimensional accuracy, fine interior and exterior finish and uniform soundness in the casting of a 1¼ lb. stainless steel instrument housing is told in the latest case history in the Cooper Alloy Advanced Know-How series. Ask for AKH #3 and get the full story on the use of shell mold and shell cores in the production of one of those "impossible" castings.

BUNA N FITTINGS

Vanton's line of Buna N and natural hard rubber fittings is described in a newly revised four-page condensed catalog. Diagrams, dimensions, and application data are included. Ask for Bulletin BN.

INQUIRIES AT ALL TIME HIGH

The demand for technical literature of value is on the increase. Our librarian reports more than 20,000 individual pieces of literature requested during the past twelve months, and we're glad to know that we are serving the needs of so many plant operating and purchasing people. For a quick glance at the most recent publications available on request, write for Technical Literature Folder TL56.

OUR FACE IS STILL RED

We're still apologizing to the many people who have requested our deluxe stainless steel valve and fitting catalog. The demand not only exceeded our supply but our ability to process them as well. Even with daily overtime and Saturday work we still haven't caught up with requests . . . so please forgive us if you're one of those on the waiting line.

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TISCO®

DEMOUNTABLE JORDAN PLUG SLEEVES

are real money-savers

The formerly complicated and time-consuming maintenance job of refilling or replacing a Jordan plug can now be accomplished in a fraction of the time. With the TISCO Demountable Jordan Plug Sleeve, the worn plug and shaft are withdrawn from the engine housing, three bolts are removed, and the sleeve taken quickly from the shaft centers. The new sleeve is then fitted over the centers which are permanently adapted to the shaft. The holding bolts are replaced and the assembly is again ready for use.

An additional money-saving feature of this design is the elimination of transportation costs covering shipment of shafts for factory installation of plugs.

Not only do you get faster changeover with TISCO Demountable Plug Sleeves, but you get much longer service because they are soundly cast of wear-resistant TISCO Manganese Steel. Where highly acid conditions prevail, TIMAXX acid and wear-resistant alloy is recommended.

Ask for further information regarding Demountable Jordan Plug Sleeves and Liners, Beater Rolls and Bed Plates, Rag Slitters, Pulp Wood Conveyor Chain, Log Haul Attachments, Barking Drum Chain and other chains, Sprockets, and miscellaneous castings designed to meet your own operating requirements.

TAYLOR-WHARTON DIVISION

HARRISBURG STEEL CORPORATION

High Bridge 5, New Jersey

Birmingham, Ala. Chicago, Ill. Cincinnati, O. Easton, Pa. New York, N.Y.

ALLIED NEWS

American Cyanamid Changes

Howard A. Blyth, formerly senior management analyst at American Cyanamid Co.'s New York office, has been appointed assistant to the general manager of the Organic Chemicals Div.

R. L. Hock has been appointed manager of the company's Fortier plant at New Orleans. He was formerly assistant manager. J. I. Davidson will be the new assistant plant manager.

H. A. Blyth

A. Schwarzenberg

J. A. Forbes

L. R. Mitchell

Bolton Appointments

John W. Bolton & Sons Inc., Lawrence, Mass., has announced several new appointments.

Arthur G. Schwarzenberg has been assigned to the newly created post of product sales manager. In this capacity he will have responsibility for the coordination of all activities related to promotion and sales of all Bolton Div. products. Associated with the company since 1936, Mr. Schwarzenberg had been manager of the Emerson Mfg. Co. Div. and was closely identified with the Bolton Award essay contest.

John A. Forbes was recently appointed to the sales staff to represent Bolton-Emerson in New York state and eastern Canada. Mr. Forbes will also serve as technical adviser to Pulp & Paper Mill Accessories Ltd., Bolton-Emerson sales and manufacturing representatives in eastern Canada.

Lawrence R. Mitchell has been promoted to the position of Emerson Div. product sales manager and will have charge of sales activities of all products in the stock preparation and allied lines.

Samuel E. Crocker Jr. has been appointed manager of the southern region for Bolton-Emerson. He has just returned from a business trip to Peru made in connection with installations of Emerson stock refining equipment.

Corn Products Elects Two Vice Presidents

E. F. Schroeder has been elected vice president in charge of manufacturing of Corn Products Refining Co. He joined the company in 1928 at Argo, Ill. In 1939 he transferred to the foreign manufacturing department and spent several years in Brazil and Argentina. In 1951, he returned to this country as manager of the company's Corpus Christi, Texas plant, became manager of the New York manufacturing department, and in 1955 was appointed assistant vice president.

A. N. McFarlane is the new vice president and general sales manager. Joining the technical service department in 1934, he served as a technical sales representative and as associate director of research and became manager of the chemical sales department in 1944. In 1947 he was made assistant to the general sales manager. He was elected a vice president of Corn Products Sales Co. in 1953.

Changes at Hercules

David R. Wiggam, manager of development for Hercules Powder Co.'s Cellulose Products Dept., has retired after 33 years' service. He was responsible, through his research overseas, for the introduction of several important Hercules chemicals.

Donald H. Sheffield has been named assistant general manager of the Synthetics Dept. Dr. R. Stanley George succeeds Mr. Sheffield as manager of the Oxychemicals Div. of the Naval Stores Dept. Paul L. Johnstone becomes director of development for the Cellulose Products Dept. and Dr. Harvey J. Taufen will succeed him as director of development of the Synthetics Dept. C. D. Ender will succeed Dr. George as director of development for Navy Stores.

Dr. R. W. Ivett becomes manager of the Associated Research Divs., Hercules' Experiment Station, succeeding Mr. Ender; Dr. Ernest Turk followed Dr. Ivett as manager of the Naval Stores Research Div.; and Dr. Alfred A. Albert became manager of the Synthetics Research Div. in Dr. Taufen's place.

Five new assignments for members of the technical sales and service staff of the Paper Makers Chemical Dept. were announced: H. B. Petersen transferred to Milwaukee; Charles H. Chapman moved to the Portland sales district with headquarters in San Francisco; Robert I. Mason to the southern sales district with headquarters in Atlanta; Robert J. Leahy will assist in sales development in miscellaneous paper chemicals in Wilmington; David W. Flotow transferred to technical service, southern district.

Three members of the administrative sales personnel of the Paper Makers Chemical Dept., Atlanta district sales office, took new posts. Louis A. Thompson becomes special representative, southern district; H. Huston McClane manager of the southern sales district, and William E. Hamilton assistant manager in charge of the New Orleans sales office.

T. S. Boerke

A. W. Huberty

Impco Sales Force Adds Two

Improved Machinery Inc. of Nashua, N. H., has announced the appointment of Thomas S. Boerke to their sales engineering department, Pulp and Paper Div. Mr. Boerke, a graduate of the Engineering College of the University of Maine, has 10 years' experience in the industry and will cover the New England states.

Anthony W. Huberty, a newcomer to Impco, will serve in a sales engineering capacity for the Illinois, Michigan, Ohio, Indiana and western Pennsylvania area. His experience includes 18 years in industrial sales and engineering, five of which were in the pulp and paper industry.

William E. Hecht, advertising manager of Corn Products Sales Co., has been elected a vice president.

Richard H. Ewert has been appointed manager of gearing sales at Foote Bros. Gear & Machine Corp., Chicago.

Ernest G. Swigert, president and founder of Hyster Co., Portland, Ore., has been elected national vice president of the National Association of Manufacturers. He is also vice president and

STICKLE NEWS

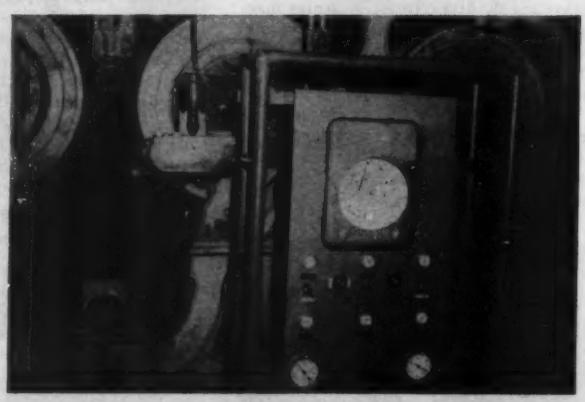
Stickle Equipment
Cuts the cost of steam

Published by Stickle Steam Specialties Co., 2215 Valley Ave., Indianapolis 18, Indiana

Eastern Mill Installs Its Fifth Stickle Moisture Control System

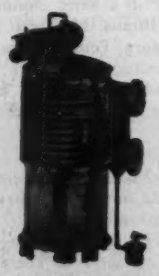
One large eastern paper mill recently installed its fifth Stickle Moisture Control System. Following a year's test, the mill found that the Stickle system (1) Maintained moisture content within plus or minus ½ of 1% on the average, (2) Restored proper moisture content after breaks up to 8 times as fast as former methods, (3) Eliminated time consuming hand adjustment of steam flow to the dryers, (4) Reduced customer complaints, (5) Lowered steam consumption, and (6) Recorded moisture variation more accurately than more expensive equipment of another make.

Stickle's system automatically maintains the exact moisture content desired in any type of paper. Learn how it can help you. Write for Bulletin 360-C.

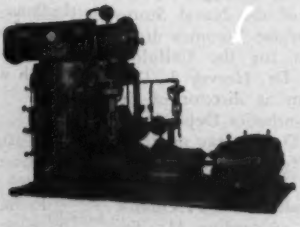


New Dryer Control Helps Prevent Picking, Curling and Cockling

Following successful operating tests, Stickle has introduced a new control that automatically maintains the best temperature on individual wet end dryers. The control improves finish, and helps prevent picking, curling and cockling on all types of paper. It consists of a thermostatic pneumatic pilot controller and diaphragm motor valve. A dial on the controller provides instant setting of any temperature desired. Temperature ranges are 50° F. to 250° F., or 150° F. to 350° F. Once the temperature has been set, the controller actuates the valve which responds quickly to meet the demand requirements of the dryers. Two types of controllers are available. The direct controller (illustrated) is attached to the steam joint on the back side of the machine. A remote controller may be located at any convenient place in the mill. Test results and new literature are available on request.



"X-Ray" view of the Stickle Open Coil Deaerating Feed Water Heater . . . guaranteed to heat more water to higher temperature in less space than any other heater at any price. Capacities: 3,000 to 300,000 pounds per hour.



The Stickle Vacuum Pump is main unit of the Vacuum Differential Drainage System. Single and duplex models. Capacities up to 300 GPM (water) and 290 CFM (air); or 900 GPM (water only).

Stickle Visible Micro Adjustable Orifice permits accurate modulated temperature control on dryers with visible operation. Eliminates steam losses due to excessive "blowing through" into return lines.

Stickle Automatic Differential Valve controls exact differentials in pressure between two sections of paper machine, assuring proper drainage at all pressures.

director of Electric Steel Foundry Co. of Portland, a director of Youngs Bay Lumber Co., Roseburg, and a director of Stebco Inc., Vancouver.

Stein Hall & Co. Inc. announces that George N. Streit has been reassigned to its Chicago branch where he will be responsible for expanding sales and service coverage to the corrugating industry. At the same time, Maxwell Stettner replaced Mr. Streit as branch manager of the Detroit office.

Allied News Briefs . . .

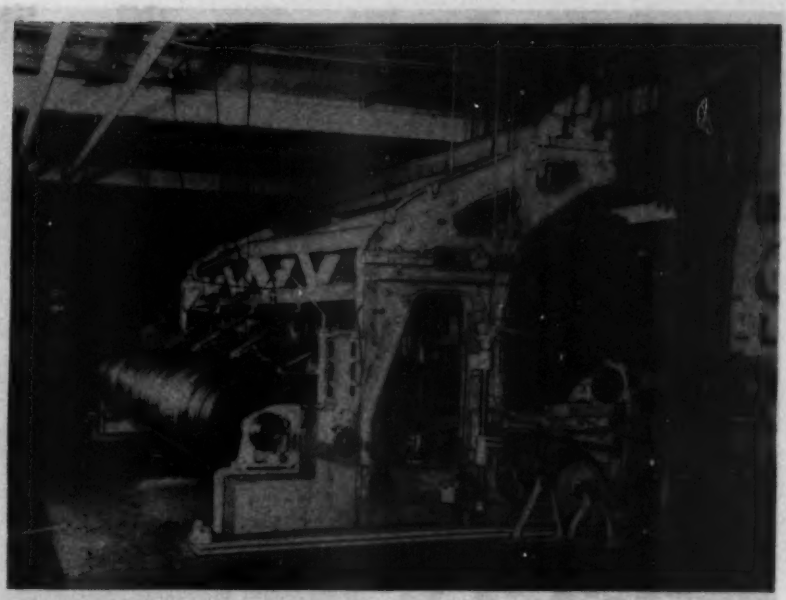
The H. K. Porter Co. Inc. of Pittsburgh has acquired the business of Henry Disston & Sons Inc. in exchange for $6,000,000 of its new 4¼% preferred stock. Porter also has acquired Carlson & Sullivan Inc., Monrovia, Cal., which will now operate as part of the new Henry Disston Div. Disston is a manufacturer of saws, files, bar and sheet steel, tools, steel specialties and other allied products.

An exchange-of-stock agreement between Conoflow Corp. of Philadelphia, and Walworth Co. resulted in Conoflow's becoming an operating subsidiary of Walworth. Conoflow manufactures final control elements.

National Starch Products Inc. has announced the opening of a new plant providing additional facilities for the production of rubber and other solvent adhesives at Plainfield, N. J., as part of its $3,500,000 expansion and modernization program.

American Cyanamid Co's Paper Chemicals Department is establishing a new sales area to cover all the states from the Rocky Mountains to the Pacific Coast.

Whiting Corp., Harvey, Ill., manufacturers of material handling equipment, announced the formation of a new export division — Whiting International — with headquarters in New York City. The new division will be devoted entirely to export business and overseas licensing.



NEW 265-in. automatic power loom that has been placed on the production line at Wisconsin Wire Works in Appleton. A duplicate unit is now being built and is to be in operation soon

NAMES *in the* NEWS

St. Regis Appointments

Willard E. Hahn, vice president of St. Regis Paper Co., has been named manager of manufacturing for all St. Regis packaging and converting plants as well as for the engineering and machine department and the wire tie department.

Succeeding him as resident general manager at the Pensacola Kraft Center is William E. Caldwell, who has been resident manager for all operations at Kalamazoo, Mich.

A. Thomas Easley has been appointed resident manager of the new bleached sulfate kraft pulp mill being constructed at Hinton, Alberta, by North Western Pulp & Power Ltd. North Western is jointly owned by St. Regis and North Canadian Oils Ltd.

A. C. McCorry, pulp mill superintendent of St. Regis' Tacoma, Wash. mill, has been appointed superintendent of the new mill at Hinton.

Three Engineers to Rayonier

William A. Cawley, Thomas A. Mostyn and Stig G. Palmgren have joined the engineering department of Rayonier Inc., it was announced recently by Russell F. Erickson, vice president in charge of engineering.

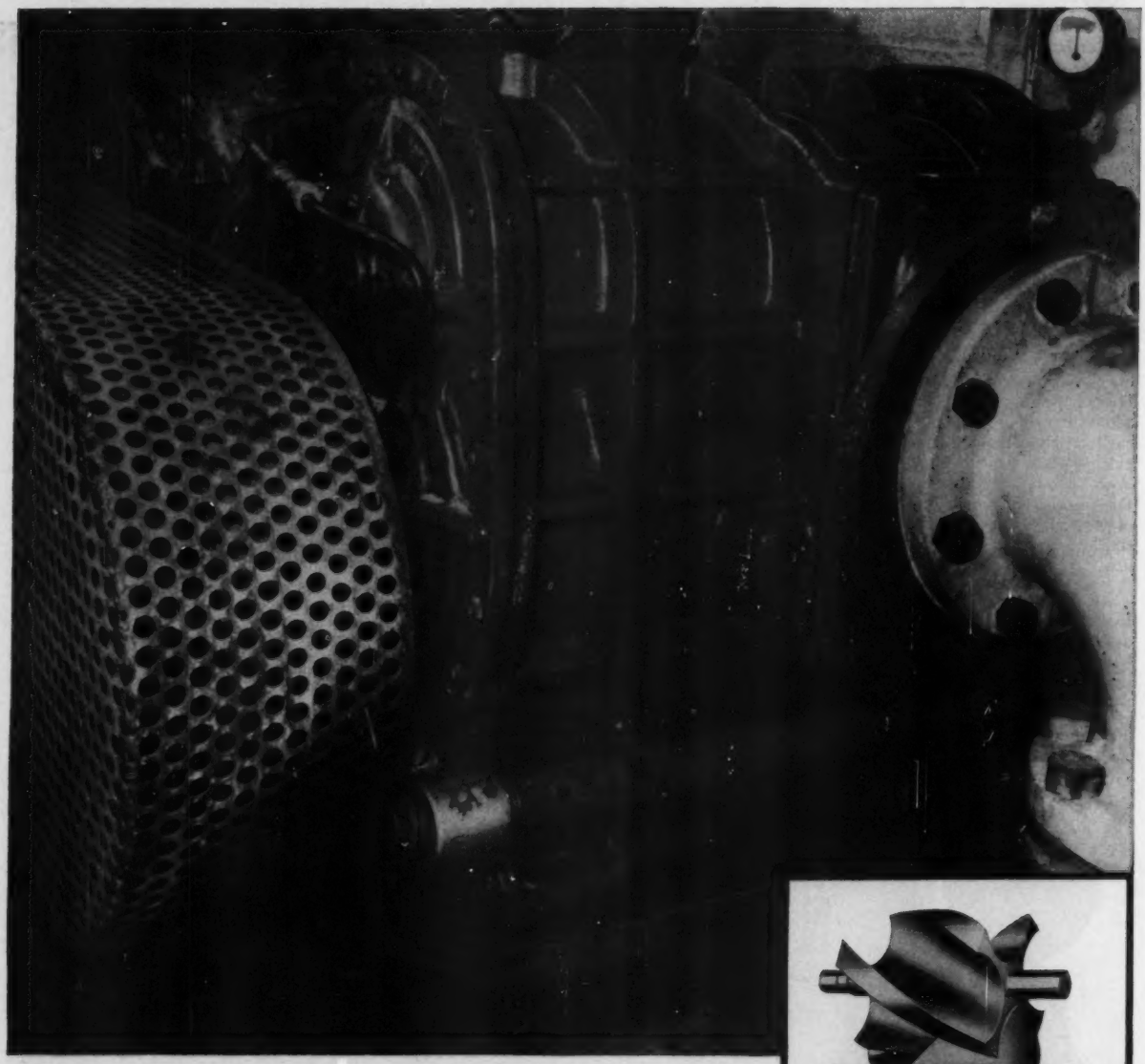
Mr. Palmgren, formerly with DuPont and International Basic Economy Corp., will serve as assistant to Mr. Erickson at Rayonier's executive offices in New York, N. Y., handling special assignments in connection with the firm's current expansion and construction activities.

Mr. Mostyn comes to Rayonier by way of General Motors, Corning Glass and Rumford Press. At Rayonier he will serve in a staff capacity to assist plant engineers in the development of a coordinated program for improving company-wide building and machinery maintenance.

Mr. Cawley, a specialist in sanitary engineering, was associated for several years with the Massachusetts State Department of Public Health. He will work in a staff capacity on all sanitary engineering problems, which include investigations and studies of effluent disposal and waste treatment.

Lily-Tulip Makes West Coast Changes

W. R. Lenderking has been made vice president of Lily-Tulip Cup Corp., relinquishing his position as vice president in charge of West Coast operations. This change is part of a broad general plan of reorganization which has already af-



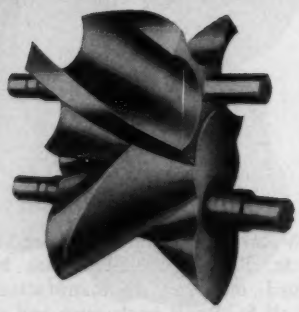
Standardaire pump solves drying and foaming problems . . . cuts maintenance for specialty paper producer

Uneven drying and heavy foaming problems resulting from vacuum fluctuations presented serious obstacles to Raybestos-Manhattan, Inc., in the production of its new, single-fiber asbestos paper.

A Standardaire vacuum pump, installed originally on a 4-month trial basis, entirely eliminated these difficulties. The unit, requiring only half of the area of the former pump, provided a constant vacuum, making possible an uninterrupted flow between the pulp vat and the final windup drum.

Now, after nearly four years of operation, often in excess of rated capacity, this unit still is in prime condition. No maintenance has been required other than lubrication at 3-month intervals.

The compact Standardaire offers greater capacity per pound of pump, with less power consumption, than other units of equal size and weight. Find out how they can help solve your problems. Write for your copy of illustrated bulletin B-154 which provides specifications and operating data.



The Standardaire's even vacuum and high capacity are the result of its exclusive cycloidal, screw-type rotors which compress air in a wide range of pressures with a minimum of internal leakage. Since rotors never touch, there is no friction, no wear or need for internal lubrication.

READ STANDARD
CORPORATION

BLOWER-STOKER DIVISION
370 Lexington Avenue
New York 17, New York

fected other phases of the company's operations. In his new capacity, Mr. Lenderking will concentrate on long-range marketing projects.

In other shifts at Lily, Roy Davenport has moved from New York to Los Angeles as acting sales manager of the Pacific Coast Div. Matt Oliver is acting as his assistant for the present.

Paul Raab continues in charge of West Coast manufacturing and plant operations but now reports directly to Harlan L. Carroll, vice president in charge of manufacturing.

W. R. Lenderking

Wilton Cole

Union Bag Announces Changes

With the resignation of H. Stuart Daniels as executive vice president and general sales manager of Union Bag & Paper Corp., the company has realigned its sales and marketing management. Sydney K. Bradley, vice president in charge of multiwall bag sales, will also supervise standard products, flexible packaging, industrial and market papers.

John T. Harrison, vice president in charge of corrugated box sales, will also head the sale of liner board and corrugated.

Fred Meendsen, now vice president in charge of advertising and promotion, has been appointed vice president in charge of marketing services.

Wilton D. Cole has been appointed vice president in charge of future planning at Union Bag & Paper Corp., succeeding G. W. E. Nicholson. In his new capacity he will head a newly formed committee to coordinate the company's future planning with developments in the rapidly growing paper industry.

Impco Elections

Improved Machinery Inc. of Nashua, N. H., has announced the election of Robert Nivison Jr. as vice president for pulp machinery sales. Formerly sales manager of the Pulp Div., he joined the firm in 1937.

Taking over as sales manager for pulp machinery is Joseph K. Perkins, a chemical engineer who has been with Impco since 1946. And Arthur L. Whiteside has been named vice president for agitation. He was formerly manager of the Agitation Div.

Nicholson Takes New Post

G. W. E. Nicholson has resigned as executive vice president of Union Bag & Paper Corp. to accept the presidency of Tennessee River Paper Co., a newly organized corporation which will build a kraft pulp and paper mill in the South. He was in charge of manufacturing for Union Bag and recently headed the company's program for future planning and expansion.

Nicholson has also been recently elected to the board of directors of Standard Packaging Corp., New York.

G. W. E. Nicholson

Robert Faegre

J. B. Faegre

G. G. Gibb

Changes at Mando

Robert Faegre was recently elected president and chief executive officer of Minnesota & Ontario Paper Co. He has been with the company since 1938, when he was selected as special representative to the Insulite Co. of Finland, a foreign subsidiary. For the last three years he has been executive vice president, responsible for all operations, manufacturing, sales, research, industrial relations, traffic, advertising and purchasing functions.

J. B. Faegre Sr. has become chairman of the board. His association with Mando began in 1930, when as a member of the predecessor firm to Faegre & Benson he became counsel to the receivers leading toward Mando's reorganization. When the company reorganized in 1941 his firm became general counsel to the company.

At Mando's Fort Frances, Ont. mill, two promotions were announced. E. J. Carriveau, former general superintendent of pulp and paper manufacture, became assistant resident manager to concentrate in the area of manufacturing operations. He has been with the company since 1911. A. M. McKelvie, formerly assistant to the general superintendent, will succeed Mr. Carriveau.

George G. Gibb was appointed manager of employee and community relations at the company's specialty and paper and Insulite fiberboard mill in International Falls, Minn. He will be responsible for the employment and development of the division's 2000 employees and will assist mill management in the planning and programming of community and public relations.

MacMillan's "H.R." Retires

H. R. MacMillan has announced his retirement as board chairman of MacMillan & Bloedel Ltd. He will continue as a director of the company and as chairman of finance and policy.

Moving up to board chairman is former president B. M. Hoffmeister, who will be succeeded by H. S. Berryman, formerly vice president in charge of production.

Abrams Retires from Marathon

Allen Abrams, vice president in charge of research at Marathon Corp., has relinquished his research responsibilities but will remain with the company as a member of the board of directors. He also plans to establish a consulting service primarily for paper industry research in Wausau. Abrams has been with Marathon for 30 years.

Scott Announces Changes

Since initial construction and expansion has been completed at Scott Paper Co.'s Everett, Wash. plant, the company has made management organizational changes to

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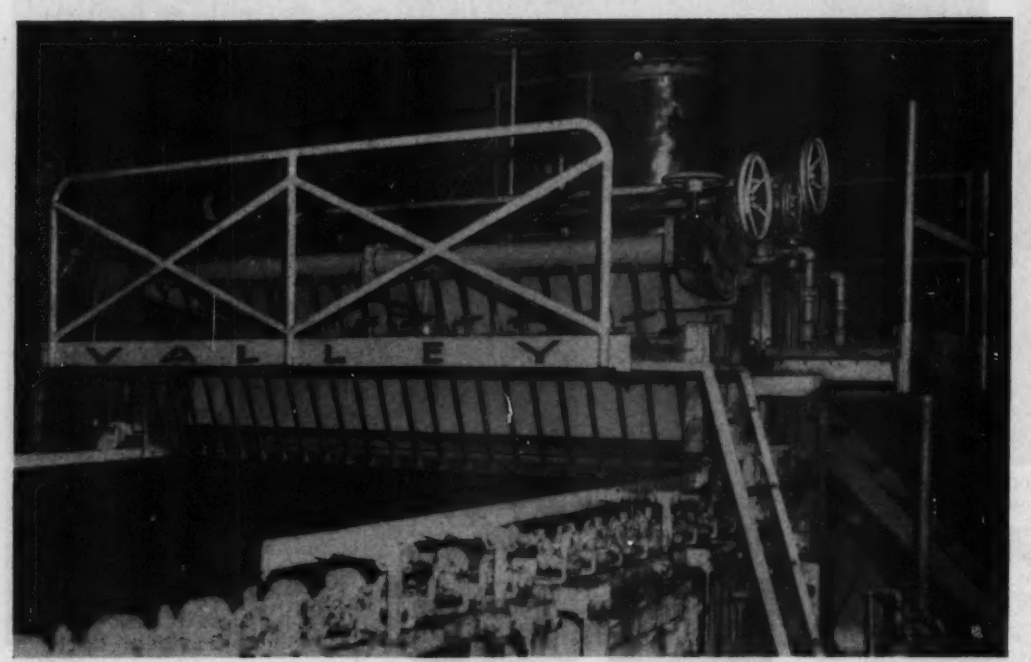

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enable the production operation to be carried on with maximum efficiency.

Loren V. Forman, technical assistant to the vice president, will become general manager with overall responsibility for the pulp mill, paper mill, technical control, engineering, plant traffic and personnel.

N. W. Coster continues as pulp mill manager but in addition will be in charge of the entire plant operation in the absence of the general manager.

Orbison Heads Appleton Woolen

F. H. Orbison has been elected to the presidency of Appleton Woolen Mills in Appleton, Wis., to succeed Mrs. T. E. Orbison. Mrs. Orbison continues as a director. (Orbison's former position of general manager has been eliminated in the new articles of incorporation recently approved by stockholders.)

At 35, Orbison is the youngest person ever to be elected president of the Appleton firm. A graduate of Cornell University and the Harvard Business School, he was formerly with Safeway Steel Products Inc. and Weatherhead Co.

Allied Industry Briefs

Frank B. Younger has been appointed Appleton Woolen Mills' sales representative for Wisconsin, Minnesota and upper Michigan. For the past 10 years he has been associated with Appleton Machine Co.

Charles W. Springer has been appointd director of research and development for Graver Tank & Mfg. Co. Inc. A vice president of the firm, he has for some years headed Graver's eastern sales.

Necrology . . .

William N. Hurlbut

William N. Hurlbut, vice president and director of International Paper Co., died early in February at his home in Pelham Manor, N. Y.

Mr. Hurlbut had been associated with the paper industry for many years and was a pioneer in the development of newsprint manufacturing in the United States and Canada. Prior to joining International Paper in 1928 as vice president, he had served as president of Canadian Newsprint Co. in Montreal and as president of George H. Mead Co. of Dayton, Ohio.

Elected to the International Paper board of directors in 1931, Mr. Hurlbut had since 1948 served as president of International Envelope Corp., a subsidiary.

Francis Kiefer

Frances Kiefer, vice president of Port Huron Sulphite & Paper Co., died of heart disease in Port Huron, Mich. He was 68.

He became president of the company in 1947 when his brother, E. W. Kiefer, then president, became president of the board. He resigned the presidency in 1953, and Norman Seagrave was named to succeed him. He remained as vice president.

Mr. Kiefer was also vice president of Western Contracting Co. and former president of Canada Forwarding Co.

Harold Crabtree

Harold Crabtree, chairman of the board of Howard Smith Co. Ltd., Cornwall, Ont., died recently in Montreal at 71. He was chairman of the board of Fraser Companies Ltd. and chairman and president of Woods Manufacturing Co. Ltd. as well as a past president of CPPA.

Charles R. Gilbert

Charles R. Gilbert, 94, one of the seven incorporators of Marathon Corp. in 1909, died recently at his Wausau, Wis. home. In addition to being one of the original Marathon stockholders, he served on the board of directors from 1917 to 1950, when he was made director emeritus.

Active in many industrial enterprises, Mr. Gilbert served such firms as Gilbert Land Co., Winton Timber & Lumber Co., National German-American Bank, American National Bank and Great Northern Life Insurance Co.

William A. Kreutzer, the nation's first forest ranger, died in Fort Collins, Colo., at 78. He was appointed a ranger in Denver in 1898.

Charles J. Hardy, retired president and member of the board of ACF Industries Inc. died in January. His son, Charles Jr., is the present chairman of the board.

E. Douglas Hyndman, 60, general manager of Halifax Power & Pulp Co. Ltd., Sheet Harbor, Nova Scotia, died in December. Before becoming manager of Halifax eight years ago, he was with Anglo-Canadian Pulp & Paper Mills Ltd. in Quebec City.

John P. Powell, 89, died in December. As president of Saunders Howell & Co., he was instrumental in bringing the Anglo-Newfoundland Development Co. Ltd. paper mill to Grand Falls and Bowater's Newfoundland Pulp & Paper Mills Ltd. to Corner Brook. He was also a member of Gander Valley Pulp & Paper Co., which had worked for years to establish Newfoundland's third mill at Gander.

Joseph L. Comer, vice president of Wm. Powell Co., died in New York City after a brief illness. He was 61.

Rudolph Herz, paper products manufacturer, died in New Rochelle, N.Y., of a heart ailment. He and his brother, the late Alexander Herz, founded the Herz Mfg. Corp. and Alexander Herz Co. Inc. in New York.

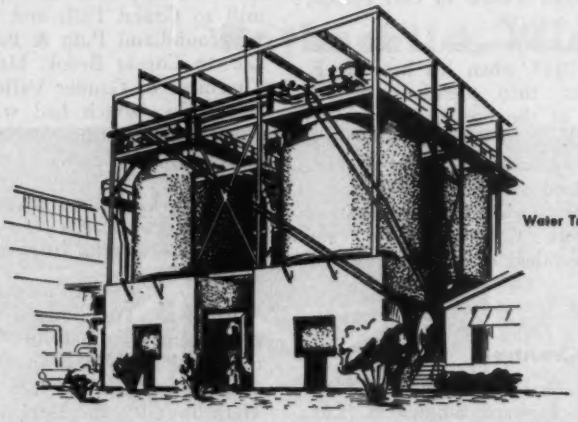
Charles E. Ashcraft, sales engineer and partner in Mann Engineering Co. of Pittsburgh, died suddenly in December. (Mann Engineering is a sales organization representing Fuller Co.)

Albert Walter, former chairman of the board of Stauffer Chemical Co., died recently at his home in Miami, Fla. Prior to his retirement, he had served Stauffer 40 years, beginning his career as a mining engineer in Cokeville, Wyo. He was elected president in 1942 and board chairman in 1945.

W. M. Reed, 63, founder and chairman of the board of American Air Filter Co. Inc., died early in February at his winter home in Ft. Lauderdale, Fla. He had relinquished active direction of the firm two months before his death.

Rudolf Unfug, an architect-engineer for Rust Engineering Co. of Pittsburgh, died recently in Washington, D. C. A specialist in refractory brickwork engineering, he had been with the firm 36 years.

Herbert W. Harker, 39, director of service operations for Kimberly-Clark Corp., died recently in Neenah, Wis.



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SAFETY NEWS

1955 NSC Pulp and Paper Contest Shows 3 Per Cent Rate Increase

COMPETING MILLS in the 1955 National Safety Council contest for pulp and paper firms have reported an accident frequency rate 3 per cent above that of 1954. Forty-four contestants maintained perfect scores, as compared to 60 in 1954.

The year's frequency rate for all divisions (except pulpwood logging) was 7.64; for the pulp and paper division, 7.37, and for the paper converting division, 8.34. Contestants numbered 518, up from the 497 of 1954.

The total exposure reported was 509,785,000 man-hours, up 10 per cent from the previous year. A total of 5367 injuries was reported, up 40 per cent from 1954.

Mills in Group A of Division I (units averaging more than 170,001 man-hours monthly) recorded a 3 per cent increase; those in Group B (85-000 to 170,000 man-hours), a 2 per cent increase; those in Group C (42, 501 to 85,000 man-hours), a 2 per cent decrease; those in Group D (21,226 to 42,500 man-hours), a 12 per cent increase, and those in Group E (6000 to 21,225 man-hours), a 16 per cent increase.

In paper converting, the Paper Bag group showed a decrease of 2 per cent; Boxes and Cartons, an increase of 7 per cent; Roofing Paper, an increase of 8 per cent; Insulation and Building Board, a dcrease of 5 per cent, and Pulp and Paper Specialties, a decrease of 5 per cent.

The new Division III (Pulpwood Logging) had a January-December frequency rate of 81.84, a 17 per cent decrease from 1954.

From eligible mills in Division I the board of judges will choose the mill with the most outstanding record. That mill will be awarded the grand prize, the Edward Benton Fritz Memorial Trophy, presented each year by THE PAPER INDUSTRY at the National Safety Congress.

The NSC has listed the mills with the best records in each division and group as follows — with frequency rates for each mill in parentheses:

Division I—Pulp and Paper Mills

Group A

1—Scott Paper Co., Chester, Pa. (1.03)
2—Price Bros. Co. Ltd., Kenogami, Can. (1.35)
3—Champion Paper & Fibre Co., Canton Div. (1.49)

Group B

1—P. H. Glatfelter Co., Spring Grove, Pa. (0.00)
2—Quebec N. Shore Paper Co., Baie Comeau, Can. (0.44)
3—Escanaba Paper Co., Escanaba, Mich. (0.85)

Group C

1—West Virginia Pulp & Paper Co., Williamsburg Mill (0.00)
1—National Vulcanized Fibre Co., Yorklyn, Del. (0.00)
1—Abitibi Power & Paper Co. Ltd., Ft. Williams, Ont. (0.00)
1—Fraser Companies Ltd., Newcastle, N.B. (0.00)

Group D

1—Certain-Teed Products Corp., East St. Louis, Ill. (0.00)
1—National Container Corp., Big Island, Va. (0.00)
1—Bartgis Bros. Co., Ilchester, Md. (0.00)
1—U.S. Gypsum Co., Gypsum, Ohio (0.00)

Group E

1—Spaulding Fibre Co. Inc., Milton, N.H. (0.00)
1—National Gypsum Co., Garwood, N.J. (0.00)
1—American Writing Paper Co., Nonotuck Div. (0.00)
1—Robert Gair Co. Inc., Middletown, Ohio (0.00)
1—The Flintkote Co., Mt. Carmel, Ill. (0.00)
1—Amalgamated Roofing Co., Chicago (0.00)
1—Kimberly-Clark Corp., Kapuskasing, Can. (0.00)
1—Container Corp. of America, Wilmington, Del. (0.00)
1—Munroe Falls Paper Co., Munroe Falls, Ohio (0.00)
1—Marshall Bros. Div., National Vulcanized Fibre Co., Yorklyn, Del. (0.00)
1—Hammond Bag & Paper Co., Wellsburg, W. Va. (0.00)

Division II—Paper Converting

Paper Bags

1—Crown Zellerbach Corp., Crown Willamette, Los Angeles (0.00)
1—Thilmany Pulp & Paper Co., Kaukauna, Wis. (0.00)
1—St. Regis Paper Co. Ltd., Dryden, Ont. (0.00)
1—Pillsbury Mills Inc., Wellsburg, W. Va. (0.00)

Boxes and Cartons

Group A

1—Container Corp. of America, Boston (0.00)
1—Bartgis Bros. Co., Ilchester, Md. (0.00)
1—Container Corp. of America, Chattanooga, Tenn. (0.00)
1—The Mengel Co., Louisville, Ky. (0.00)

Group B

1—Container Corp. of America, Cleveland (0.00)
1—Container Corp. of America, Los Angeles (0.00)
1—Container Corp. of America, Chattanooga, Tenn. (0.00)
1—Ft. Wayne Corrugated Paper Co., Rochester Div. (0.00)
1—Container Corp. of America, Baltimore, Md. (0.00)
1—Container Corp. of America, Santa Clara, Cal. (0.00)
1—American Coating Mills Div., Robert Gair Co. Inc., Grand Rapids, Mich. (0.00)
1—Hoerner Boxes of Ft. Worth Inc., Ft. Worth, Tex. (0.00)
1—Bay West Paper Co., Green Bay, Wis. (0.00)

Roofing Paper

1—Bird & Son inc., Chicago (0.00)
1—Certain-Teed Products Corp., Kansas City, Mo. (0.00)
1—The Ruberoid Co., Minneapolis, Minn. (0.00)
1—The Flintkote Co., Portland, Ore. (0.00)

Insulation and Building Boards

1—Armstrong Cork Co., Macon, Ga. (0.00)
2—Minnesota & Ontario Paper Co., Insulite Div., International Falls, Minn. (1.35)
3—Wood Conversion Co., Cloquet, Minn. (2.36)

Specialties

1—International Paper Co., Kansas City, Kan. (0.00)
1—Lily-Tulip Cup Corp., Monticello, Ind. (0.00)

Division III—Pulpwood Logging

1—St. Regis Paper Co., Bucksport, Me. (27.78)
2—St. Anne Power Co., Beaupre, Que. (29.20)
3—Abitibi Power & Paper Co. Ltd., Sault Ste. Marie, Ont. (31.54)

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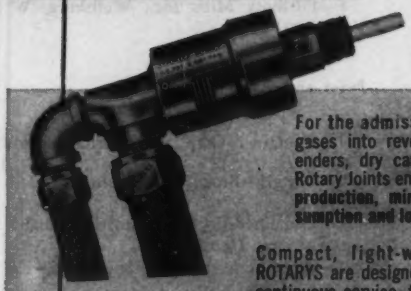

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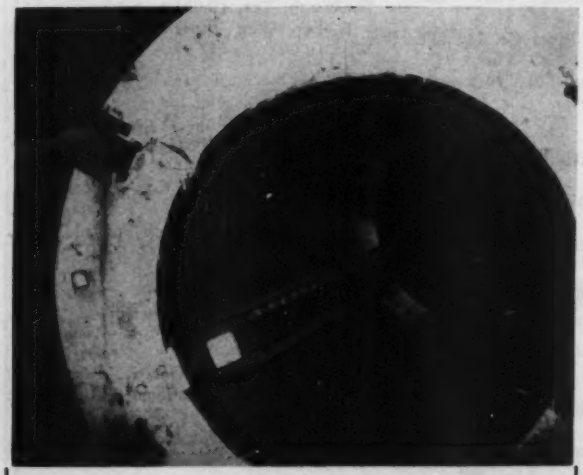

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PATENT REVIEWS

MELVIN NORD*

Rope transfer means for dryer rolls

U.S. 2,716,291, issued Aug. 30, 1955, to James A. Daly Jr. and assigned to Lukens Steel Co., describes rope transfer means for the ropes carrying the tail of a web of paper in an entire paper dryer section.

Prior transfer of the tail from one set of ropes to another has been accomplished manually. This requires an operator to be on the alert to prevent excessive waste of the web. Due to the high-speed nature of existing machines in present-day use, manual transfer has been substantially eliminated and, instead, a number of attempts have been made to provide automatic transfer, but such attempts require considerable spacing of the last roll of the first dryer section and the first roll of the second dryer section to accommodate the transfer pulleys required. In the present invention, this requirement is avoided.

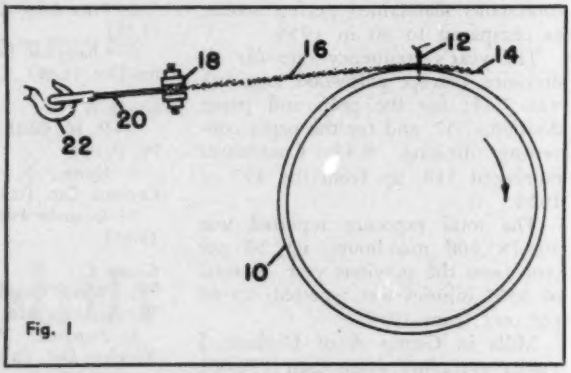

Fig. 1

Method for covering a cylinder with a screen

U.S. 2,711,575, issued June 28, 1955, to Lawrence G. Zesbaugh and assigned to Minnesota & Ontario Paper Co., describes a method for securing a screen to a forming roll used in making fiber composition board.

As shown in Figs. 1, 2, 3 and 4, the screen 16 is attached to the forming cylinder 10 by means of wires 12, leaving a free end 14. To the other end, members 18 are secured to the screen and attached by cables 20 to a hook 22, thereby holding tension on the screen while it is being wound on the surface of the cylinder. A screen tensioning device is laid on the screen, as shown in Figs. 2 and 3, the channel 24 extending across the width of the cylinder, an angle 34 being attached to the chan-

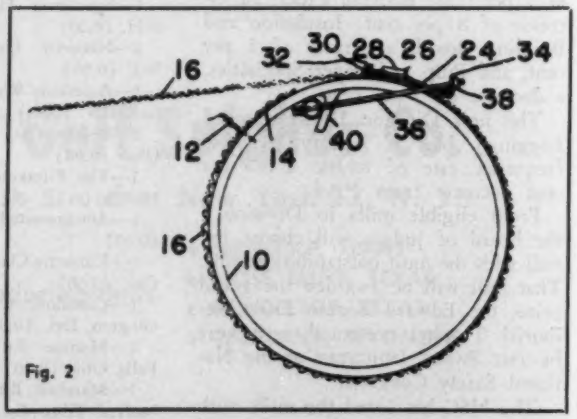

Fig. 2

*Patent attorney, 17600 Pinehurst, Detroit 21.

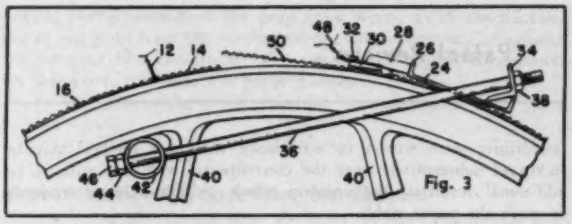

Fig. 3

nel and extending beyond the edges of the cylinder. A flat strip 30 also extends the width of the cylinder and is connected to the channel 24 by bars 28. Securing wires are fastened to nuts 32 on the strip 30.

To the opposite end of the angle 34 are secured rods 36, which are secured to a pipe 42 running through the cylinder. After the tying wires 48 are inserted and tied as shown in Figs. 3 and 4, the tension is tightened to any required degree by tightening nuts 38 or 46. The free end of the screen is then released from the hook 22 and is cut so that the cylinder surface will just be covered by the screen. The ends of the screen are then secured together by welding. Then the tie wires 12 and those secured to the bolts 32 are removed. This permits the screen to assume a uniform tension around the entire surface. Finally, the tensioning device is removed.

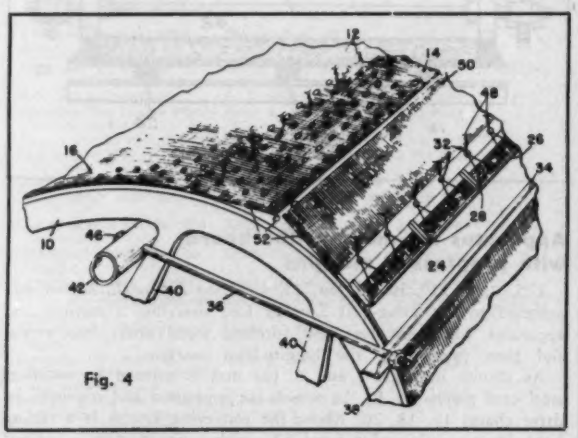

Fig. 4

Manufacture of specialty glass-fiber papers

U.S. 2,721,139, issued Oct. 18, 1955, to Hanns F. Arledter and assigned to Hurlbut Paper Co., describes a process for producing a specialty paper consisting entirely of glass fibers, latex, and colloidal silica, without any cellulosic fibers. The size of the glass fibers used is critical, as indicated in some detail in the patent. Paper of this type can be produced on conventional paper machines.

Improved method for weaving twill fourdrinier wire cloth

U.S. 2,728,358 issued Dec. 27, 1955, to William A. Kools of Neenah, Wis., describes an improvement in a method of weaving twill fourdrinier wire cloth. The method contemplates regulation of the relative tensions of the lower warp wires; that is, those which are being formed into the long crimp during the beat-up of the shute into the fell of the cloth. It has been discovered that if during the beat-up of the shute wire a greater tension is maintained in one set of the lower warp wires than in the other set of lower warp wires, the sloping crimp which occurs in the long crimp of twill wire cloth woven in accordance with prevailing practice can be eliminated and a symmetrical uniform crimp or knuckle produced. The tensioning is accomplished by splitting the bottom shed just prior to the beat-up of the shute wire.

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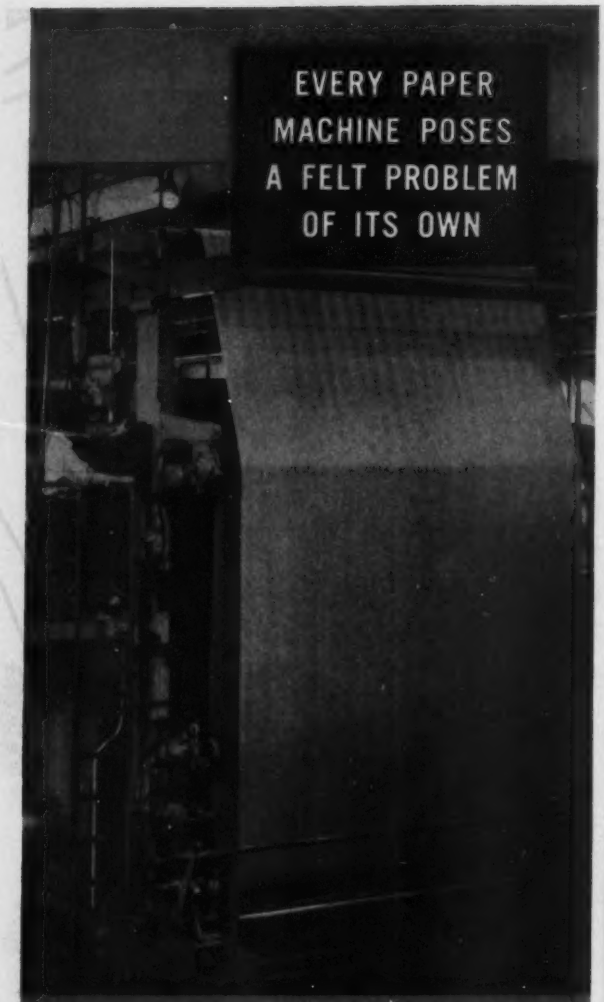

No supplier ever built two identical paper machines. Even though the same set of prints be used, the machines differ in more ways than one—a little closer tolerance here, a little difference in adjustment there—an infinitesimal variance in bearings.

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Patent Reviews . . .

fourdrinier wire woven in accordance with this method may be increased substantially over the conventional wire and will, as an additional result of the uniform crimp, exhibit a lesser tendency to mark the paper webb.

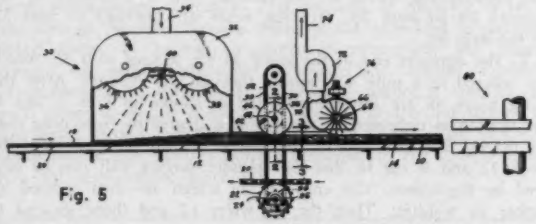
Fig. 5

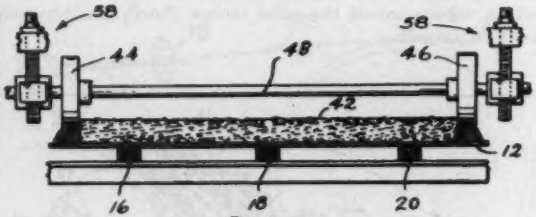

Fig. 6

Apparatus for making fiberboard with prepressed margins

U.S. 2,700,177, issued Jan. 25, 1955, to Arthur L. Mottet and assigned to the Long-Bell Lumber Co., describes a method and apparatus which involves first forming wood fibers into a mat and then prepressing the longitudinal margins.

As shown in Figs. 5 and 6, the mat is formed on stainless steel caul plates 10, 12, 14 which are supported and conveyed by drive chains 16, 18, 20. Above the conveying system is a felting head 30, consisting of a hood 32 which connects with a conduit 34. The fibrous feed enters the hood through the conduit and passes between a pair of toothed compression rolls 36, 38. These feed the material downward while compressing it. The compressed feed is disintegrated and dispersed by a rapidly driven picker roll 40 mounted between the compression rollers 36, 38. The dispersed fiber then falls down on the caul plates where it is built up into a mat 42.

A pair of driven compression rollers 44, 46 pre-compresses the margins. The mat then passes to a hood 66, which is open at the bottom and houses a driven scalping roll 68. The material removed from the surface of the mat is exhausted via fan 72 and conduit 74. The mat is finally introduced into a hot-press 80 and pressed to the desired density.

Separation of materials of different specific gravities

U.S. 2,718,179, issued Sept. 20, 1955, to Hervey G. Cram, describes a machine operating on the centrifugal principle of separation, in which means for aerating the material are provided for the purpose of causing a flocculation of usable particles.

Some of the ways of using the machine in the paper industry are the following:

(1) The separation of valuable papermaking material from the excess liquid in the filtrate from the paper machine wire as effected by the addition of shower water at the screens, head box etc., so that the papermaking material may be returned to the paper machine wire.

(2) The separation of the pulp from water, as in the thickening of the pulp from the screens from a low consistency of around 0.5 per cent to a consistency of 3 per cent or higher, as required for delivery to the beaters or paper machine.

(3) The separation of objectionable foreign matter from pulp or paper stock.

Manufacture of wood-fiber hardboard

U. S. 2,724,307, issued Nov. 22, 1955, to Basil O. Stewart and assigned to National Gypsum Co., describes a method of making heat-consolidated wood-fiber hardboard.

Wood chips are subjected to a high-temperature, high-pressure treatment in an aqueous liquor formed by a number of prior treatments, together with sufficient make-up water to maintain the chips in dispersion. The treatment consists of a rapid rise in temperature to 190-250°C., maintaining this temperature and the pressure thus produced for 5-30 min., rapidly separating the wood from the liquor, reducing the wood to fibers, forming a mat and consolidating it by heat and pressure.

Other Patents of Interest to the Pulp and Paper Industry

Subject	Inventor or Assignee	Patent No.	Date
Machine for effecting a refining treatment of fibrous material	Kurt Wandel	2,718,178	9/20/55
Collapsible cellular carton	Bloomer Bros. Co.	2,718,347	"
Carton	James W. Main	2,718,348	"
Paper web pre-steamer	George W. Swift, Jr. Inc.	2,718,712	9/27/55
Pulp refining apparatus	E. D. Jones & Sons Co.	2,718,821	"
Reversible-flow cylinder paper-making machine	Pusey & Jones Corp.	2,718,823	"
Suction transfer roll assembly	Beloit Iron Works	2,718,825	"
Pulp molding dies	Central Fibre Products Co.	2,718,826	"
Container and closure	Gaylord Container Corp.	2,718,996	"
Bottle carrier with handle	Container Corp. of America	2,718,997	"
Corner construction for folding boxes	Baljak Corp.	2,718,998	"
Self-locking folding box construction	Baljak Corp.	2,718,999	"
Lubricated bearing assembly	Beloit Iron Works	2,719,065	"
Method for making cellulosic board	Curtis Companies Inc.	2,719,328	10/4/55
Apparatus for pulping paper stock	George B. Fowler	2,719,462	"
Machines for reducing and treating fibrous papermaking materials	Anton J. Haug	2,719,463	"
Bottom gluing and fluting mechanism for paper container making machines	Bruno A. Wittkuhns and Gilbert F. Hill	2,719,465	"
Machine for making paper containers	National Paper Bottle Co. Inc.	2,719,466	"
Winding mechanism for paper container making machines	National Paper Bottle Co. Inc.	2,719,467	"
Machine for making a transparent corrugated board	Associated Packaging Co.	2,719,566	"
Bottle carriers	Robert Gair Co. Inc.	2,719,649	"
Collapsible partitioned carton	Sutherland Paper Co.	2,719,650	"
Container with rip-open flap	Gunther Mayer-Jagenberg	2,719,663	"
Container	St. Joe Paper Co.	2,719,665	"
Envelopes	Albert M. Broudy	2,719,734	"
Process for sterilizing paper and pulp products	Kamlet Laboratory	2,719,787	"
Producing a high-strength reinforced paper web	Arthur E. Carlson	2,719,804	"
Continuous press for plywood or fiberboard	Herbert E. Hessler et al	2,720,231	10/11/55
Machine for making single-faced corrugated board	F. X. Hooper Co. Inc.	2,720,910	11/18/55
Bottle carrier	Eastern Box Co.	2,721,001	"
Shipping carton	William J. Billerbeck	2,721,022	"
Paper knit bag	Ronald H. Marks	2,721,462	11/25/55
Manufacture of impregnated cardboard	Aktiebolaget Statens Skogsindustrier	2,721,505	"
Paper machinery	The Black-Clawson Co.	2,721,647	"
Manufacture of paper for photographic purposes	Eastman Kodak Co.	2,721,801	"
Gummed paper products	Leo B. Schram	2,721,810	"
Apparatus for making two-piece paper bag	Stanley G. Yount	2,722,165	12/1/55
Boxes or cartons	David Levkoff	2,722,362	"
Carton	Lorentzen Hardware Mfg. Corp.	2,722,363	"
Utility container	George A. Moore	2,722,364	"
Can holder	Marathon Corp.	2,722,365	"
Carton joint assembly	Arthur E. Carlson	2,722,366	"
Carrying device	Bernard M. Verlin	2,722,367	"
Carton handle	Waldorf Paper Products Co.	2,723,027	12/6/55
Mailing envelopes	Curtis 1000, Inc.	2,723,076-7	"
Paper products and processes	Monsanto Chemical Co.	2,723,195	"

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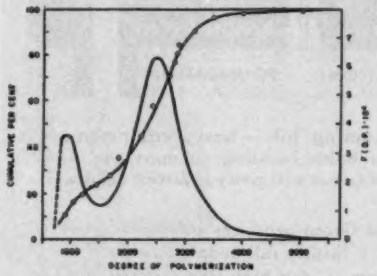


Molecular properties of balsam fir cellulose

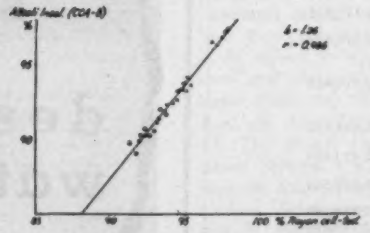
At McGill University and the Pulp and Paper Research Institute of Canada, the authors made a study of the molecular properties of balsam fir cellulose also isolated by the alkaline extraction of the holocellulose. The direct nitration of *Abies balsamea* gave 48 per cent of a nitrated polysaccharide, which was identical with the alpha cellulose content and which corresponded to 42 per cent of "true" cellulose. Apparently no degradation had occurred during the nitration, even when this was carried out for 100 hours at 17° C. The degree of polymerization (D.P.) of the nitrate was determined viscometrically at a constant sheer rate of 500 $sec.^{-1}$, and the average value was found to be about 4500 which is somewhat higher than that of white spruce cellulose and only slightly lower than that of cotton and flax celluloses.

Fractional precipitations were carried out with aqueous acetone solutions of the nitrated cellulose, by the gradual removal of solvent by a current of air. The weight frequency distribution of the nitrates thus showed two maxima with 25 per cent of the material present within the lower peak (Cf. Figure 1). This fractionation gave D.Ps. ranging from 1000 to 5500, but, due to possible degradation during the fractionation, these figures are given with reservation. The chain length distribution was quite similar to those found for spruce and paper birch celluloses. Ten tables, two figures and 47 references are included. J. L. Snyder and T. E. Timell. *Svensk Papperstidn.* 58, 851-859 (1955) (in English).

Chemical properties of balsam fir cellulose

The authors prepared a chlorite holocellulose from balsam fir which was then subjected to repeated alkaline extractions. These failed to remove all the mannose and xylose units from the fibrous residues. On the other hand, when chlorine was used in the holocellulose preparation, and this was followed by alkaline extraction all the non-glucose sugar units were removed completely. A physical mixture of raw ramie and ivory wood meal (mannan) (the former having a D.P. of about 5800 and the latter a D.P. of about 360-390) was nitrated, but no sharp fractionation of the cellulose nitrate on the one hand, and mannan nitrate on the other could be effected. Furthermore the mannan was distributed over the entire molecular weight range, instead of being concentrated in the fraction having the lower D.P. Similarly, fractionations were carried out with nitrated balsam fir alpha cellulose, and all fractions showed some mannose and xylose units.

This difficulty in fractionation makes it impossible to tell whether or not mannose units are actually inherent in true wood cellulose, and certain recent conclusions in the literature regarding the chemical nature of wood cellulose cannot be accepted without reservation. Furthermore the mixture of ramie cellulose and ivory nut mannan showed a chain length distribution that was certainly very similar to that of the balsam fir cellulose. The implications of this are discussed. One figure, six tables and 24 references are given. J. L. Snyder and T. E. Timell. *Svensk Papperstidn.* 58, 889-893 (1955) (in English).



Correspondence between the values from the Rayon cellulose test and the alkali solubility method (CCA-8). b = regression coefficient, r = correlation coefficient.

Methods for gauging viscose yields by various analytical methods

At the XIIIth International Congress of Pure and Applied Chemistry held at Stockholm in 1953, the deficiencies of the traditional alpha-cellulose determination were emphasized. In the present paper this method was compared with the "alkali-solubility technique" [determined according to CCA-8; *Svensk Papperstidn.* 57,119 (1954)] and with the "rayon cellulose test" [Cf. F. Charles, *Tappi* 37, 148 (1954)]. These three methods were applied to a series of commercial rayon and paper pulps, and of these only the rayon cellulose test could be used in predicting quite accurately the yield of rayon from a given pulp. Advantages claimed for the method are small sample and time requirements. The author feels that by varying the alkali concentrations, a suitable caustic soda concentration can probably be found that will give results by alkali solubility in agreement with those obtained in the rayon cellulose test. In three experiments with commercial rayon pulps, it was shown that by using 24.5 percent NaOH, it was possible to get results quite comparable with those given by the rayon cellulose method. The accompanying figure shows the correspondence between the rayon cellulose test and the present CCA-8 method. ϕ. Ellefsen. *Norsk Skogind.* 9, 264-268 (1955) (in English).

Determination of traces of mercury in pulp products

The procedures given in the literature for determining very small amounts of mercury (a few parts per million) are unsatisfactory when applied to materials containing large amounts of cellulose. For this reason the following method was developed.

Samples of pulp, paper or board (ranging from 5 to 30 grams depending on the amounts of mercury) were heated and distilled with concentrated sulfuric acid containing 5 grams of dry sodium sulfate and 0.2 gram of sodium chloride. The amount of acid used varied, but the range was 5-10 milliliters for every gram of sample used. The distillate (containing mercury) was absorbed in two flasks (in series) each containing 0.5 per cent sulfuric acid. When most of the cellulose of the original sample had been destroyed, the mixture was cooled and re-treated with 0.2 gram sodium chloride, and, if necessary with another 10 milliliters of sulfuric acid, and reheated to a pale straw color.

The solutions in the two absorption flasks were combined and refluxed 20 minutes with a slight excess of potassium permanganate, cooled and then treated with hydroxylamine sulfate (very gradually) until the solution was colorless. At times re-treatment with permanganate or the hydroxylamine was required, but the final solution must contain no excess of either reagent.

The mercury in the solution is best determined by the "reversion technique" of Irving, Andrew and Risdon [*J. Chem. Soc.* (London) 1949, 541]. The method was found to be accurate for very small amounts of mercury. In a slightly modified form, it could also be applied to mill waters. D. E. Davis and K. Linke. *Australian Pulp and Paper Ind. Tech. Assoc.* 8, 251-61 (1954).

Rayon pulp properties and the filterability of viscose

This is one of a series of studies on wood pulp nitration carried out at the Norwegian Pulp and Paper Research Institute. Certain authors [*e.g.* Akim and Kiljkki. *Zellstoff u Papier* 3, No. 6, 123 (1954)] have recently made rather categorical statements regarding a correlation between chain length distribution in rayon pulps and the filterability of viscose solutions prepared from such pulps. The present study was made with four commercial pulps with significantly different filterability values, and the results do not confirm these generalizations.

For example, no correlation was found between filterability and the amount of a fraction ranging in degree of polymerization (DP) between 200 and 1200. This is supposed to be the fraction giving rise to the best filterability of viscose solutions. Nor was there any evidence that, when pulps contained cellulose chains above 1200, the subsequent filterability was poor. The present author says that it is possible that at times DP and filterability may be correlated, but his experimental evidence does not show this, and so he objects to any broad generalizations. Of the four pulps studied, the one which was actually lowest in the 200-1200 DP range, and which had the highest average DP and also the largest fraction with a DP above 1200, showed the most satisfactory filterability value.

Ordinary chemical analyses, as well as chromatographic (sugar) determinations, showed no differences that could be correlated with filterability. All the chain length distribution curves of the four pulps showed a high degree of heterogeneity, but there was no evidence that this was incompatible with good viscose filterability. ϕ.Ellefsen. *Norsk Skogind* 9,399-406 (1955) (in English).

Saponified rosin size precipitated with alum

This is the second of a series of studies on the theory and practice of rosin sizing, emanating from the Institute of Technology in Darmstadt. The results, which are given in five tables and which involve 39 experiments, may be summarized as follows: Rosin soaps, formed by complete saponification, when treated with aluminum sulfate at a pH of 4.5 gave rise only to the water insoluble aluminum triresinate. At this pH practically no aluminum hydroxide was formed. The precipitate could not contain the diresinate, since the aluminum triresinate was stable under the conditions given (*i.e.* in the presence of water *alone*).

On the other hand the triresinate, which is soluble in a variety of organic solvents, may be converted into the insoluble diresinate in these solutions sometimes even by traces of water. The conversion of the tri- into the diresinate is contingent on the following: (a) the moisture content of the resin-containing precipitate and the water content of the organic solvent; (b) the nature of the solvent; (c) the chemical composition of the original rosin; and (d) the time elapsing before the solution containing the aluminum triresinate is subjected to analysis.

The sensitivity of the dissolved resinate to the action of water varies greatly with the nature of the solvent. It is little subject to change in chloroform, somewhat more sensitive in methylene chloride, and this sensitivity increases in going from benzene to ether to petroleum ether. Because of these marked differences in sensitivity to hydrolysis, the work of some previous investigators, who studied aluminum resinate in petroleum ether, and then drew conclusions regarding the composition of precipitated resinates are open to criticism. Aluminum triresinate in chloroform forms extremely stable solutions, which may remain unchanged for days. On the other hand, the triresinate in ether or in petroleum ether is very susceptible to hydrolysis. In petroleum ether, this decomposition leads mainly to the formation of diresinate, whereas in the case of ether, the hydrolysis may give rise to the monoresinate.

The purity of the original rosin also influences the rate of hydrolysis, the purer the rosin, the more rapid is the hydrolysis. In the case of moist (never dried) precipitates formed from aqueous solutions in which the triresinate was present, it was evident that the "free rosin" hypothesis enunciated by G. Wurster [*Dingler's Polytechn. J.* (1877), 826,75] would have to be abandoned. Wurster assumed that only when the moist resinate was heated was the aluminum triresinate formed. Eleven references and five tables are given. Georg Jayme and Walter Seidel. *Wochbl. Papierfabr.* 83, 947-952 (1955) (in German).

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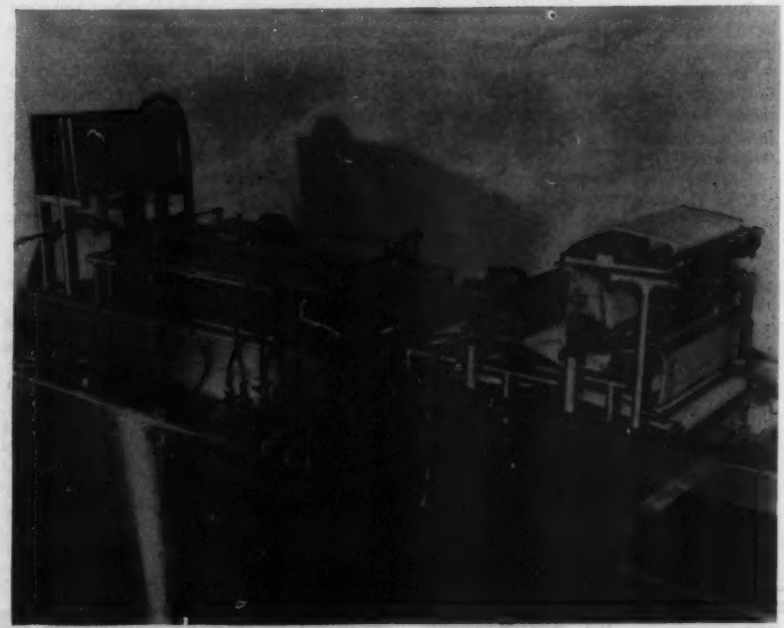


Pilot paper machine

Using only a small quantity of raw material, a continuous sheet of almost any type of paper can be made on this new pilot papermaking machine, making unnecessary the expensive use of a production machine.

Test runs have shown that paper made on the pilot machine can be duplicated on full-size machines, thus aiding in the planning of large-scale production. Experiments also can be carried out on the small machine at little cost.

The pilot machine is claimed to be especially useful for testing chemical pulp when only small quantities are available. The sheet can then be tested for porosity, strength and other properties. *Armco Steel Corp., Middletown, Ohio.*

Industrial reodorant

A new industrial reodorant known as "Alamask" TAL has been developed as a result of extensive research in the study of the behavior characteristics of various wood oils.

Tests both abroad and in the United States appear to indicate that this product is effective at 1 per cent for overcoming the fatty odors present in tall oil. It is claimed that the new Alamask TAL can be used in the direct processing of crude tall oil, masking the odors and allowing this material to be used in the preparation of sanitary, textile and specialty soaps. It also appears to provide odor control for tall oil throughout the processing cycles. *Rhodia Inc., Engineering Section, 230 Park Ave., New York 17, N. Y.*

Centrifugal pump

A paper stock and industrial pump features a diverging type impeller which enables the pump to handle liquids containing high concentrations of solids, air and gases. This diverging type impeller has a much greater area at the discharge level than at the inlet. This unique design further prevents vapor binding, avoids clogging, makes the pump self-venting and self-regulating.

The pump is a horizontal, single-stage unit, built in sizes from 4 to 12 in., with capacities from 200 to 7000 gpm and heads from 5 to 225 ft.

In pulp and paper mills it will handle stock at concentrations as high as 10 per cent as compared to 5 per cent concentrations handled by conventional type centrifugal pumps. *Ingersoll-Rand Co., 11 Broadway, New York 4, N.Y.*

Silicone-wax water repellent

A new silicone water repellent, packaged in aerosol form for ease in application, will render many materials water proof. A handy way to treat workmen's clothes, industrial equipment, electrical and ignition systems exposed to rain, splash or general outdoor exposure, this water repellent can reduce maintenance costs by reducing rust and corrosion on metal surfaces.

It can be sprayed on natural or synthetic cloth materials, protective clothing, shoes, canvas, felt, paper and wood and is available in 12-oz. cans, disposable 3-lb. commercial cylinders and 5-lb. spray cylinders. *Textile Adjuncts Corp., 876 Pacific St., Brooklyn, N. Y.*

Headerless steam generator

A field erected headerless type steam generator of capacities ranging from 50,000 to 150,000 lb. of steam per hour has a low initial cost. It is easy to maintain and is very compact. Units can be built for either pressurized or balanced draft firing.

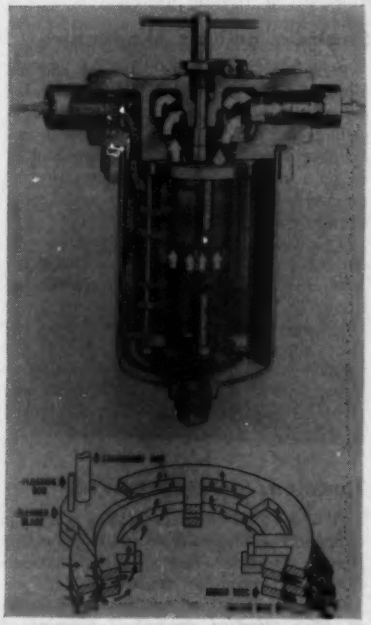
The design consists of a two-drum, bottom supported boiler with completely water cooled furnace having tangent tube spacing on bottom, both sides and roof, and a wider tube spacing as required in the front wall to permit burner installation with a tile backed-up target wall opposite the burners. This target wall is tube cooled with wall tube spacing arranged so that these tubes form a furnace screen ahead of the superheater.

The design employs no waterwall and no boiler headers. Water-steam friction losses are reduced to less than one-quarter of that of conventional designs. Thus, virtually all of the hydrostatic head is available to support rapid circulation through tubes. Such rapid circulation adds greatly to the washing and cleaning effect that high velocity water provides inside of the waterwall and boiler tubes. Installations are completely self-draining, including boiler, waterwall, economizer and superheater tubes. Units can be provided with steam temperature control of either the submerged heat exchanger type or the spray type. The top drum of the unit is provided with an effective steam purifier of Springfield design. *Springfield Boiler Co., Springfield, Ill.*

Paper smoothness gage

This new gage provides instantaneous, accurate measurement of paper smoothness considerably beyond that specified in TAPPI Standard No. T-479sm48. It consists of a precision device having a smooth glass plate on which the paper is placed, a movable gage head through which air is directed, and a Precisionaire air flow measuring instrument. The readings on the gage appear as soon as the gage head comes to rest on the paper and will remain as long as the paper remains in place. No pressure other than the accur-

ately established weight of the gaging head is used. The gage covers a range from zero flow, such as when the gaging head is in contact with the glass plate, to a maximum roughness represented by less than 1 sec. on the currently used air lead scale. *Sheffield Corp., Dayton 1, Ohio.*



Cleanable micronic filter

Small size, high flow rates and low pressure drop—plus cleanability—are features of this all-metal, edge-type filter designed to remove micronic particles from large quantities of liquid. It will stop all particles larger than 40 microns, which is sufficient for many systems, or in those cases where finer replacement cartridge type elements are used as secondary filters, cartridge life is greatly extended.

Because of the unusually low pressure drop across the filter, flows can be handled in a space six times smaller than with a cartridge type unit under similar conditions.

Cleaning is done without stopping flow, by turning the handle, by hand or motor drive. Accumulated sludge may be drained off at convenient periods through the bottom drain plug. *Cuno Engineering Corp., Meriden, Conn.*

Temperature controller

The new type 1460 temperature controller for positive flow control through diaphragm operated valves, based on temperature variations, offers a choice of temperature ranges. It is equipped with an external vapor-tension thermal system to actuate the power unit in the pilot. By simple adjustment, it permits either 100 per cent throttling action or "on-off" snap action within a wide limiting range. Two pressure gauges and a temperature indicator are compactly built into the pilot case. *Black, Sivalls & Bryson Inc., 7590 E. Twelfth St., Kansas City 26, Mo.*

Mercadium reds

A combination of the sulfides of cadmium and mercury, introduced under the trade name Mercadium reds, will be more economical than the cadmium sulfoselenide reds they will replace. Improved brilliancy and cleanliness of hue are advantages, and raw materials are not in short supply as is the case with selenium. A light and a dark shade is now in production, and intermediate and maroon shades, making a total of six, will soon be available.

Since processing involves a calcination at elevated temperatures, and since the chemical compounds are completely inorganic, Mercadium reds are insoluble in the processing media of industry, heat resistant at elevated temperatures, and extremely fast to alkali and the deteriorating effects of exposure to sunlight and the elements. *Imperial Paper & Color Corp., Pigment Color Div., Glens Falls, N. Y.*

Large capacity pipe saw

Designed for on-the-job cutting of 10- to 16-in. cast iron and steel pipe, this guillotine-type power pipe saw weighs only 312 lb. and operates in a space 32 in. wide. Double chain pipe vise clamps saw to pipe, and a machined cast steel V saddle base assures a square cut at right angles to the pipe.

The saw can easily be mounted at any angle, has finger tip feed control and is self aligning. Its high-speed steel blade is 22 in. long and has a 2-in. stroke. The blade is lifted from cut on the return stroke, which prolongs blade life. Power can be supplied by either electric or air motor. *E. H. Wachs Co., 1525 N. Dayton St., Chicago 22, Ill.*

Portable combustion analyzer

The Cities Service combustion analyzer for oxygen and combustibles in flue gases, which that company loans to users, is now to be manufactured for sale by Bailey Meter Co.

The portable instrument weighs about 25 lb. and conducts an analysis of a gas sample for oxygen and combustible gas

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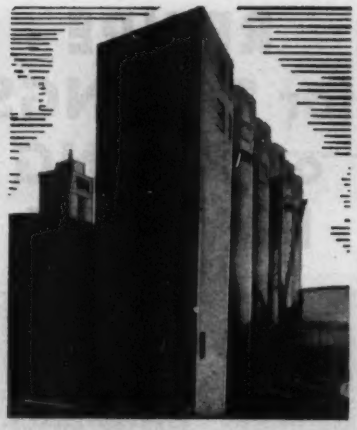

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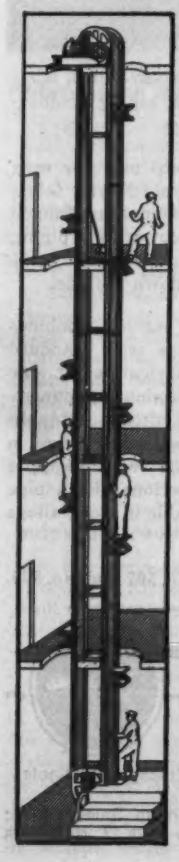

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content. The per cents by volume of these gases in the sample are continuously and simultaneously indicated on the instrument meters. The complete package includes a sampling pump, hose and tip, as well as a thermocouple for measuring temperature. It operates on a 110-v 25-60 cycle ac power source. The meters have both 4 and 20 per cent range spans, affording greater instrument accuracy and sensitivity. The oxygen indicator is provided with an additional scale for measuring the output of the instrument thermocouple in degrees F. *Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio.*

Rigid PVC pipe

A rigid non-plasticized polyvinyl chloride pipe also suitable for use as a structural material has no additives or fillers, insuring its maximum resistance to attack by various acids, alkalies, salt solutions, alcohols and other chemicals. It will not support combustion and may be sawed, threaded, solvent welded and heat welded. Pipe fittings and valves are available in the same material.

The picture shows an installation of both pipes and valves in a chlorine drying and liquefaction plant. *Joseph T. Ryerson & Son Inc., Box 8000-A, Chicago 80, Ill.*

Steam cleaning gun

The most outstanding feature of this new solution-lifting steam gun is the manner in which its tube within a tube construction protects the operator from the heat of the steam. Steam passes through the inner insulated tube while the cleaning solution passes through the exterior tube.

A sealed rotary joint permits the operator to rotate the nozzle without twisting the hose. Operator fatigue is further reduced because the thrust of the steam is taken up between the handles. The gun weighs 6 ¾ lb. in the 3½-ft. length, more in the 5-ft. size.

Maintenance of the gun is simple as there are few moving parts. No motors, pumps or injectors are needed to operate—only cleaning solution and 30 lb. of steam. *Oakite Products Inc., 116 Rector St., New York 6, N. Y.*

Strainers and air eliminators

Redesigned models of strainers and air eliminators for use with liquid meters offer new "straight-through" flow, greater ruggedness and increased versatility. The strainers have a larger screening area and double-basket construction which protects the inner screen from being stretched or distorted by fast-moving particles.

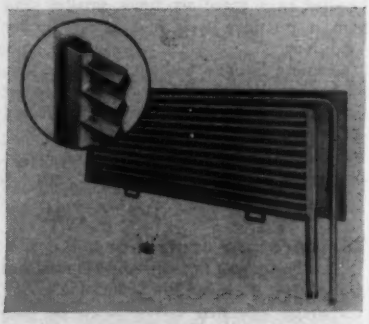
The chief advantages of the new air eliminators are easy access to all working parts and in-line outlet and inlet connections. They also feature replaceable valve faces and seats, resilient facing protecting the main and pilot valve assemblies and toggle-type float arm to the pilot valve linkage. *Rockwell Mfg. Co., Meter & Valve Div., 400 N. Lexington Ave., Pittsburgh 8, Pa.*

Tantalum corrosion test kit

A convenient kit for testing tantalum either in the laboratory or in process equipment is available without charge to production, pilot plant or research technicians.

The kit consists of two pieces of 0.020-in. thick tantalum sheets and a length of 0.030 tantalum wire for attaching the specimens. The sheets are stamped with the word "tantalum" and a serial number for easy identification.

Tantalum is immune to attack by most acids. It is inert to wet chlorine, chlorine dioxide, bromine or iodine and almost all halogen compounds except fluorides. It is also inert to organic and food chemicals. It is attacked by hydrofluoric acid, oleum and other substances containing free SO_3, and by strong alkalis. *Fansteel Metallurgical Corp., North Chicago, Ill.*



Heat transfer units

Pressure ratings for two styles of Platecoil heat transfer units have been increased by 50 per cent. Platecoils consist of embossed sheets of metal welded together to form channels for passage of heating or cooling media. Two header-type double embossed units are now offered for use up to 150-lb. maximum operative pressure. This

increased rating retains the one-to-four safety factor between maximum operating pressure and rupturing pressure.

The pressure limitations apply to Platecoils made of cold rolled steel and the various alloys in which they are available. For single-embossed, header-type units, a maximum operating pressure of 70 lb. is recommended. For serpentine type, maximum operating pressures recommended are 200 lb. for doubled-embossed and 154 lb. for single-embossed. *Tranter Mfg. Inc., Lansing 4, Mich.*

Impulse steam trap

A new series of impulse steam traps is designed with high capacity to handle heavy condensate loads. Capacities are approximately two to three times that of standard traps of the same size.

Outstanding features include: high capacity at all pressures up to 600 lb., complete stainless steel body and internal parts, excellent low-pressure operation, steam temperature condensate discharge characteristics, and freeze-proof against back pressure up to 50 per cent.

The new series is available now in ½- and ¾-in. sizes. Larger sizes are forthcoming. *Yarnall Waring Co., Philadelphia 18, Pa.*

Template kit

A new matched set of five reversible templates for drawing general layouts or details of piping and valving systems used in fluid process work contains all American Standard symbols, has provisions for new or special symbols, and is claimed to be the quickest and most comprehensive outfit for this particular work.

At least 5000 commonly used piping, fitting and valving diagrams can be drawn accurately with pencil or stylus by using the cut out symbols on the templates singly or in combination. The templates are made of rigid, glare-proof vinyl. *A. Lawrence Karp, 16 Putnam Park, Greenwich, Conn.*

Production analyzer

This production analyzer, used in conjunction with Tracerlab's Beta gauges for thickness measuring and with Tracerlab's automatic control console, gives a continuous record of production for a wide variety of sheet material, including paper. Production may be registered in feet or yards or whatever unit of length is customary for the particular process.

This analyzer permits an integrated, up-to-the-minute record of production for the shift, the day, or the run of material. The information is immediately available and requires no computations to be made from chart records. *Tracerlab Inc., 130 High St., Boston 10, Mass.*

Topside margin gluer

This margin gluing machine delivers the work coated side up. If it is mounted over a conveyor the coated material may be carried along for further processing or drying and the coating can be easily inspected.

Glue or other coatings including latex can be applied in one or more strips, edge only or complete over-all coating. Roller arrangements are available to suit various needs. Machines are available in widths up to 12 in., with strip gluing rollers in various widths and with thermostatically controlled heated tank if desired. *Potdevin Machine Co., 285 North St., Teterboro, N. J.*

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NEW LITERATURE

Books

BASIC LUBRICATION PRACTICE. By Allen F. Brewer. Reinhold Publishing Co., 430 Park Ave., New York 22, N.Y. 6¼ x 9¼. 285 pages. $6.75.

Lubrication and maintenance engineers, executives, purchasing agents, and machine operators will find in this book all the information needed to choose and use the most effective lubricant for industrial and power plant machinery. There are many charts and tables of data to make possible a quick comparison of lubricants for specific machinery under particular operation conditions.

Lubricants for a wide variety of uses are covered: bearings, gears, chains, wire rope, flexible couplings, cams, steam turbines and cylinders, internal combustion engines, power plant auxiliaries, electric motors, etc. Dual viscosity figures (Centistokes and Saybolt) are used throughout the book. References direct the reader to more detailed information on any specific topic.

A subject index facilitates use of the book.

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HOW TO SELL AND UNSELL IDEAS. Written by Fred DeArmond. Published by Lloyd R. Wolfe, 476 Park Ave., Glencoe, Ill. 237 pages. 6 x 9. $7.50 plus postage.

The author is not concerned with the matter but with the manner of conducting a controversy, what to say, how to say it, and how to make your points stick. He draws upon his own experience, as well as upon reams of research material. He does not stop with mere quoting; he dissects and analyzes the style of the great controversialists of history, their strategy and techniques, and spotlights the methods that have achieved success.

All of the 18 chapters are outlined for quick reference and every chapter is concluded with a capsule summary. The man or woman who must frequently attempt to convert an audience to his way of thinking, will find in this book all the pros and cons, the do's and don'ts, and the answer to "Why didn't I think of that at the time?". It is written in an interesting, readable style that makes for fast comprehension and easy-to-remember usefulness.

This book will improve your powers of persuasion, aid you in pin-pointing weaknesses and fallacies in your opponent's argument, and will provide you with the know-how for converting your position from the defensive to the offensive. It will also help you cultivate a style, technique, and confidence that carry conviction.

SULPHITE PULPING OPERATING MANUAL. Prepared by the Sulphite Committee, Technical Section, Canadian Pulp & Paper Association, 2280 Sun Life Bldg., Montreal 2, Que. 5½ x 8½. 76 pages. Paperbound. $2.00.

This operating manual, which is intented to give new employees a general knowledge of the sulfite industry, outlines the major steps and equipment in making sulfite pulp and explains why the basic operations are carried out, without going too deeply into the technology of the process. The main operations and basic principles of sulfite pulp making are described; there is no attempt to make the manual detailed enough to cover variations in techniques from mill to mill.

Various jobs performed in a sulfite mill are described; the number of men required and the duties they perform are covered. Wood room and cleaning, the acid plant, the cooking process, blowpit operation, screen room operation, the bleach plant, dryer machines, and the question of instrumentation in a sulfite mill are discussed. The appendix outlines the manufacture of bleach liquor.

The new-comer to the industry will find in this handbook the material he most needs to gain a sound understanding of sulfite pulping.

GLOSSARY OF PACKAGING TERMS. Second edition compiled and published by Packaging Institute Inc., 342 Madison Ave., New York 17, N.Y. 5½ x 8½. 323 pages. $6.75.

"The purpose of this glossary is to provide a uniform language of packaging for use in writing specifications and contracts, and to provide in a single volume a reliable source of accurate information for purchasing departments, packaging engineers and technicians, and traffic men." The revised second edition is based on the first edition but contains about three times as many terms.

The glossary actually brings into one volume the packaging terms of industries and organizations as diverse as the American Ceramic Society and the Waterproof Paper Manufacturers Association. The categorization of terms used in the first edition has been abandoned, and all terms are listed alphabetically with full cross-references.

In the appendix is a collection of the methods for stating dimensions and taking measurements of several types of containers.

Booklets and Pamphlets

PREVENTIVE MAINTENANCE REDUCES DOWNTIME, LOST MAN-HOURS. Published by Multi-Amp Corp., 10 Third St., Newark 7, N. J. 8½ x 11. 2 pages. Testing current actuated protective devices, an important aspect of the preventive maintenance program conducted by a prominent industrial firm employing a large variety and number of motors, is discussed and illustrated in this reprint. It describes a modern technique for running speedy performance checks on motor starter overload relays to determine trip times.

RHEOLOGY IN PAPER COATING. By R. N. Thompson. Published by Hagan Corp., 323 Fourth Ave., Pittsburgh 30, Pa. 6 x 9. 16 pages. This authoritative booklet discusses

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Paper and Paperboard Making	6.00
Procedure Handbook of Arc Welding	2.00
Outside U.S.A.	2.50
Drying of Paper on the Machine	1.50
Lessons in Papermaking—Part 1	1.50
Lessons in Papermaking—Part 2	1.50
Notes and Observation on Beaters	1.00
Trouble on the Paper Machine	.75
Pulp Bleaching (A Symposium)	.50
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New Literature . . .

rheology, which is the science of the deformation and flow of matter. While centering on rheology in paper coating, it is also applicable to related industries. A bibliography, glossary, and list of symbols are included.

PUMP CHART SPOTS THE TROUBLE. By Eric Anderson. Published by Eco Engineering Co., Newark, N. J. 8½ x 11. 2 pages. A helpful chart designed to quickly identify the probable source of failure or erratic performance in most widely used types of rotary displacement pumps is contained in this pamphlet. The chart details over 25 possible mechanical and chemical trouble symptoms. The folder also includes an explanation of how and where the chart applies and a brief description of the types of equipment that fall into the rotary pump class.

Manufacturers' Publications

Through the co-operation of manufacturers and suppliers, THE PAPER INDUSTRY *lists the following catalogues, bulletins and booklets. They may be obtained without cost or obligation, unless otherwise specified, by writing direct to the manufacturers. Please address requests on your company letterhead.*

Scale Removal. Dowell Service, Inc., P. O. Box 536, Tulsa 1, Okla. — A 2-page bulletin describing the services available for the removal of scale from paper mill lines is now available. Included are several illustrations and a short discussion of the case histories of various pipe line problems.

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Automatic Regulating Valves. Schade Valve Mfg. Co., 2527-37 N. Bodine St., Dept. PI, Philadelphia 33, Pa. — Folio No. 4 describes a number of control valves for liquid level and pressure regulation, as well as other items of a similar nature. Featured in this 4-page folio are cutaway drawings of these automatic regulating valves.

Insulation. Allis-Chalmers Mfg. Co., Dept. PI, 991 S. 70th St., Milwaukee, Wisc. — A leaflet, No. 05R8341 entitled Silco-Flex Insulation Opening the Way to Longer Motor Life, discusses the all-silicone-rubber insulating system for motor and generator stator windings. This 4-page release explains the Silco-Flex Insulation electrical, thermal and mechanical properties as well as its chemical properties.

Dryers. Sandy Hill Iron & Brass Works, Dept. PI, Hudson Falls, N.Y. — A new 4-page brochure on Dryers and Dryer Sections has recently been released, which discusses precision coring, laboratory tests, high finishes, bearings, gears, framing, and selective drives. Included are 10 illustrations.

Blowers. Read Standard Corporation, Dept. PI, 370 Lexington Ave., New York 17, N.Y. — A new 4-page, two-color folder, 8½ x 11-in, gives engineering details and technical specifications of a compactly designed product for handling air or any other gas under either pressure or vacuum. This folder, No. B-154, includes a cutaway photo of the interlocking main and gate rotor assemblies; a cross-sectional diagram to show component parts; performance charts and four tables to aid in selection of the proper size of blower, and lists both psig and cfm for low-, medium-, and high-capacity blowers.

Two-Stage Pumps. Allis-Chalmers Mfg. Co., Dept. PI, 991 S. 70th St., Milwaukee, Wis. — A new bulletin, No. 52B6105C, describes the two-stage pumps available for boiler feed and other high pressure applications. This 6-page bulletin includes dimension tables for both close-coupled and frame-type constructed pumps along with performance charts.

Stainless Steel Valves. Cooper Alloy Corp., Dept. PI, Hillside, New Jersey. A 12-page technical data booklet covering stainless steel valve design, selection, maintenance and repair is now available. Photographs, engineering drawings and cut-aways combine to make this a condensed discussion of these valves.

Magnesium Hand Truck. Magline Inc., 1900 Mercer St., Dept. PI, Pinconning, Mich. — Bulletin HT-101R offers information regarding a light-weight magnesium hand truck, including specifications and technical data. Also included are descriptions of optional accessory equipment and suggestions on how the user can custom design this truck to meet his exact job requirements.

Trambead Overhead Materials Handling Equipment. Cleveland Tramrail Div. of Cleveland Crane & Engineering Co., Wickliffe, Ohio. — Booklet 2008-L covers stresses in many types of overhead tracks and track peening. Photos and drawings illustrate a wide variety of installations and equipment details. Track switches, carriers, tractors, cranes, transfer cranes, gantry cranes, automatic handling systems, interlocks, discharge points, electrifications, buckets and grabs are also described.

Enzyme Converting of Starches. Stein, Hall & Co., Inc., 285 Madison Ave., New York 17, N. Y. — A new technical bulletin outlines the technique of enzyme converting of tapioca, potato, corn and wheat starches for the paper industry. Illustrated with tables, the 10-page work explains in detail the various steps in the process.

Waxed Papers—Production Methods and Equipment. The Black-Clawson Co. Inc.; Dilts Machine Works Div., Fulton, N. Y. — Reprint of a treatise on waxed paper which was presented at the 1954 TAPPI Coating Conference discusses the types of waxed papers commonly used, typical makeup of each product classification and equipment used to produce these various grades.

Boiler Tube Corrosion. Tubular Products Div., Babcock & Wilcox Co., Beaver Falls, Pa. — Bulletin TR-537 presents 11 ways to avoid boiler tube corrosion. The eight-page folder explains many of the causes of corrosion and suggests methods of eliminating them.

Stock Thickeners. The Black-Clawson Co., Shartle Bros Machine Div., Middletown, Ohio. — Four models of stock thickers are described in bulletin 21-SB. Construction details and flow diagrams showing design and operation of decker type thickeners for stock thickening, stock washing, fiber recovery and save-alls are included.

Dispersion Mills. Kinetic Dispersion Corp., 95 Botsford Pl., Buffalo 16, N.Y. — A new catalog of Kady Dispersion Mills contains photos and working drawings, complete descriptions, performance data and specifications. The range of tank capacities is from 1 gal. (laboratory model) to 210 gal.

Webwelder. Dorr-Oliver Corp., Barry Pl., Stamford, Conn. — Bulletin 3302 is a 12-page work describing the characteristics, design features, principle of operation, applications and advantages of this new machine for splicing side rolls of paper and is illustrated with photos and line drawings. The Webwelder will join longitudinally as many as five narrow webs to form a single finished roll of paper up to 85 in. wide. The weld is the same caliper as the remainder of the stock, and tensile strength is equal to that of unwelded paper.

Tubular Products. Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.— A new six-page folder, TB-337, provides information pertaining to tubular products intended for sub-zero temperature applications.

Alloy Tubing. Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.—Product engineers and others whose duties require a knowledge of alloy mechanical tubing will be interested in bulltin TB-360, which gives the advantages to be gained by utilizing mechanical tubing.

Heat Exchanger and Condenser Tubes. Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.—An eight-page technical folder, TB-329B, covers pertinent information on all of the various popular grades of carbon, alloy and stainless steel heat exchanger tubing, both seamless and welded. Also included is a special section dealing with the problems of installing heat exchanger and condenser tubes by the expanding method.

Electrostatic Neutralizer. Herman H. Sticht Co. Inc., 27 Park Place, New York, N.Y.— The principles of operation and the characteristic properties of typical electrostatic neutralizers are described in this bulletin, along with details of installation of the "Magic Wand" which can be safely used where flammable vapors or liquids are present.

Tachometers. Herman H. Sticht Co. Inc., 27 Park Place, New York, N.Y.—Nine different kinds of tachometers are described in bulletin No. 1048, including portable, permanent mounting, centrifugal, chronometric and vibrating reed types.

Polyethylene Extrusion. Dilts Machine Works Div., Black-Clawson Co., Fulton, N.Y.— Bulletin 19-DM describes and illustrates three models of polyethylene extrusion laminators with accessories. A distinctive feature of each model is the Gross-Dilts Heat Transfer Insert in the cooling drum for quickly setting the plastic film. The manufacturer assumes complete responsibility for installations.

Hydraulic Clamp Cutters. E. P. Lawson Co., 426 W. 33rd St., New York 1, N.Y.—A 16-page two-color brochure describes the new Lawson Series V-65 hydraulic clamp cutters. Included are the 46-, 52- and 55-in. heavy-duty cutters as well as model 55-T-77 that enables an operator to cut sheets up to 77 in. on a 55-in. cutter. A full page is devoted to a floor plan and machine specifications. New developments and optional equipment are featured.

"ACAP" Pump. Allis-Chalmers Mfg. Co., Milwaukee, Wis.—Construction features of the "ACAP" pump for handling solids in suspension under variable capacity and head conditions are given in bulletin 08B8328. Among the pump's applications in the paper mill industry is its use as a fan pump, for handling blow pit stock to washers, for proportioning, and for machine head box and refiner supplies.

Control for Wet End Dryers. Stickle Steam Specialties, 2215 Valley Ave., Indianapolis 18, Ind.—Automatic temperature control for individual wet end dryers is illustrated and described in bulletin 560. The control is designed to improve paper finish, and to help prevent picking, curling, and cockling on all types of paper. Included are tables showing suggested inside and surface temperatures for the first seven wet end dryers.

MARKET QUOTATIONS

RAGS (Domestic)

NEW RAGS

The following are quotations to mills, f.o.b. New York: per cwt.

No. 1 White Shirt Cuttings	14.50 to 15.50
New Unbleached Muslins. .	16.25 to 16.75
Fancy Shirt Cuttings ...	5.50 to 6.00
No. 1 Percales	6.50 to 7.00
No. 1 Washables	2.75 to 3.00
No. 1 Light Silesias	7.50 to 8.00
No. 1 Light Prints	5.25 to 5.75
Light Flannelettes	7.50 to 8.00
Cottonades	3.75 to 4.00
Blue Overalls.....	8.00 to 8.50
Blue Cheviots	8.00 to 8.50
Canton Flannels, Bleached	11.50 to 12.00
Canton Flannels, Unbleached	11.50 to 12.00
Osnaburg Cuttings	11.00 to 11.50
Underwear Cuttings, Bleached	16.00 to 16.50
Underwear Cuttings, Unbleached	16.00 to 16.50
Khaki Cuttings—	
Sun Tan	6.25 to 6.75
Mixed	3.75 to 4.00
Linen Cuttings—	
American	7.50 to 8.00
White	12.00 to 13.00
Grey	12.00 to 13.00

RAGS (Domestic)

OLD RAGS

Quotations to consuming mills, dollars per hundred pounds, f.o.b. New York, follow:

	Per cwt.
Roofing	
No. 1	1.45 to 1.55
No. 2	1.35 to 1.45
No. 3 and 4	1.05 to 1.15
Twos and Blues—	
Repacked	2.50 to 2.75
Thirds and Blues—	
Repacked	2.25 to 2.50
Miscellaneous	2.00 to 2.15
Whites, No. 1—	
Repacked	4.00 to 4.25
Miscellaneous	3.25 to 3.50
White, No. 2—	
Repacked	3.00 to 3.25
Miscellaneous	2.50 to 2.75

RAGS (Foreign)

ex dock New York City

NEW RAGS

	per cwt.
New Dark Cuttings.....	Nominal
New Mixed Cuttings.....	
New Light Silesias.....	
Light Flannelettes.....	
Unbleached Cuttings.....	
New White Cuttings.....	
New Light Oxfords.....	
New Light Prints.....	

RAGS (Foreign)

ex dock New York City

OLD RAGS

	per cwt.
No. 1 White Linens.....	Nominal
No. 2 White Linens.....	
No. 3 White Linens.....	
No. 4 White Linens.....	
No. 1 White Cottons.....	
No. 2 White Cottons.....	
No. 3 White Cottons.....	
No. 4 White Cottons.....	
Extra Light Prints.....	
Ord. Light Prints.....	
Med. Light Prints.....	
Dutch Blue Cottons.....	
French Blue Cottons.....	
French Blue Linens.....	
Checks and Blues.....	
Linsey Garments.....	
Dark Cottons.....	
Old Shopperies	

ROPE and BAGGING

f.o.b. and ex dock New York City

	per cwt.
Gunny No. 1—	
Foreign	5.50 to 6.00
Domestic	5.50 to 6.00
Wool Tares—	
Light	5.50 to 6.00
Heavy	5.75 to 6.25
No. 1 Scrap Bagging .	4.75 to 5.25
Manila Rope—	
No. 1 large, dom.	7.50 to 8.00
No. 1 small	6.50 to 7.00
Sisal Rope—	
No. 1 large	6.00 to 6.50
No. 1 small	5.50 to 6.00
New Burlap Cuttings....	5.75 to 6.25
Jute Threads—	
Foreign (Nom.).....	6.00 to 6.25
Domestic	6.25 to 6.50
Strings—	
No. 1 sisal.....	4.75 to 5.00
No. 2 sisal.....	4.25 to 4.50
Soft jute.....	4.75 to 5.00
Mixed	2.00 to 2.25

WASTE PAPER

The following are quotations, dollars per ton, for No. 1 packing f.o.b. New York:

	per ton
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Hard White Env. Cuts.	145.00 to 155.00
Hard White No. 1 ..	110.00 to 115.00
Soft White, one-cut ..	95.00 to 100.00
Soft White, No. 1 ..	80.00 to 85.00
Fly Leaf No. 1	45.00 to 50.00
Fly Leaf, Woody No. 1	45.00 to 50.00
No. 2 Mixed Col. Woody	35.00 to 40.00
Flat Stock—	
No. 1 Heavy Books and Magazines Repacked .	38.00 to 40.00
Mixed Books	28.00 to 30.00
Ledger Stock—	
No. 1 White	65.00 to 70.00
No. 1 Mixed (Colored)	42.50 to 47.50
Manilas—	
New Env. Cuttings ..	80.00 to 85.00
New Cuts, One-Cut—	
Extra Manilas	23.00 to 25.00
Manila Tab Cards, Free of Ground Wood	95.00 to 100.00
Colored Tab Cards	75.00 to 80.00
Kraft—	
New Envelope Cuttings	85.00 to 90.00
Tripled Sorted No. 1 100%	45.00 to 50.00
No. 1 Old Assorted ..	32.50 to 37.50
News—	
White Blank	85.00 to 90.00
Overissue	33.00—
No. 1 Folded	28.00—
Old Corrugated Containers	26.00—
New Jute Corrugated Cuts	31.00—
Mill Wrappers	26.00—
Box Board Chips	18.00—
No. 1 Mixed Paper	16.00—

CHEMICALS

f.o.b. shipping point

Alum (Papermakers)—	
Lump, cwt.....	5.05—
Ground, cwt.....	4.30—
Powdered, cwt.	5.20—
Blanc Fixe—	
Pulp, bulk, ton ....110.00—	
Dry, barrels .....115.00—	
Bleaching Powder—	
Drums, cwt	5.02 to 6.50
Casein (Domestic Standard) 20-30 mesh (bags), lb.	
80-100 mesh (bags), lb.	32.00 to 34.00
Argentine, lb.	29.00 to 30.00
China Clay—	
Domestic Filler Bulk (mine) ton ...	10.00 to 19.00
Domestic Coating Bulk (mine) ton....	17.00 to 25.00
Imported (ship side) Bulk (lump) ton...	20.00 to 30.00
Chlorine—	
Tank cars (wks) cwt...	3.05—
Gelatine (silicon), lb. ...	1.25 to 1.35
Glye. (C.P.) drums, lb.	.30½ to .31
Litharge. Powd. bbl. ...	.17½ to .18
Rosin (Gum)— New York, per 100 lbs.	
E	9.55—
F	9.55—
G	9.55—
WW	9.70—
Rosin (Wood), carlots, F.O.B. South	6.50—
Salt Cake—	
Dom. bulk (wks) ton	28.00 to 29.00
Imp. bulks on dock— (Atl. ports) ton (Nom.)	22.00—
Soda Ash—	
Bulk (works) cwt...	1.45—
Paper bags, cwt.....	1.80—
Soda (Caustic)—	
Solid, drums, cwt. ..	4.20 to 4.85
Ground and flake, drums, cwt.	4.50 to 5.25
Sodium Silicate—	
60 deg. 55 gal. drums, (works) cwt.....	1.60 to 1.70
40 deg. 55 gal. drums, (works), cwt.....	1.35 to 1.40
Starch—	
Pearl, 140 lb. bags, cwt.	6.39—
Pearl, barrels, cwt. ..	6.39—
Paper (Sq.) bags, cwt.	6.39—
Powdered, barrels, cwt.	6.60—
Sulphur (Crude) (Mine) bulk, long ton	26.50 to 28.00
Talc—	
Dom. 100 lb. bags (mine) ton	26.00 to 30.00
Canadian	35.00 to 45.00
Titanium Dioxide—	
Barium Pig. bbls., lb.	.24½ to .26½
Calcium Pig. bbls., lb.	.24½ to .26½
Zinc Oxide, bags	14.50 to 15.50

WOOD PULP

Quotations on domestic and Canadian wood pulp, dollars per short air dry ton, delivered consuming mills including basic freight allowances, follows:

Bleached Sulphite .....150.00—	
Bleached Sulphite, Canadian .....150.00—	
Unbleached Sulphite ...125.00—	
Unbleached Sulphite, Canadian .....130.00—	
Bleached Soda .....145.00—	
Bleached Soda, Canadian.142.50—	
Kraft Bleached .....147.00 to 150.00	
Kraft, Bleach., Hardwood .....145.00—	
Kraft, Bleach., Southern.150.00—	
Kraft, Bleach., Canadian.150.00—	
Kraft, Unbleached. Northern .....125.00—	
Kraft, Unbleached, Southern .....112.50 to 120.00	
Kraft, Unbleached, Canadian .....115.00 to 125.00	
Kraft, Semi-Bleached, Southern .....135.00 to 140.00	
Sulphite Screenings .... 72.50—	
Sulphate Screenings .... 67.50—	
Groundwood	80.00 to 85.00

Quotations on imported wood pulp, dollars per short ton, on dock American Atlantic ports with varying freight allowances, follow:

Bleached Sulphite, Swedish .....150.00—	
Bleached Sulphite, Norwegian, freight allowed.145.00—	
Bleached Sulphite, Finnish, freight allowed.150.00—	
Unbleached Sulphite, Swedish .....130.00—	
Unbleached Sulphite, Finnish, freight allowed .130.00—	
Kraft, Unbleached, Swedish, freight allowed..120.00—	
Kraft, Unbleached, Finnish, freight allow...120.00 to 150.00	
Kraft, Bleached, Swedish, on dock....150.00—	
Kraft, Bleached, Norwegian .....150.00—	

PAPER

Quotations are mill quotations New York City

Boards—

Prices per ton, delivered in New York, 10 tons or more:

Plain chip .....100.00—	
News vat lined chip ..105.00—	
.009 chip, rolls	95.00—
Filled news	97.50—
Solid news .....100.00—	
White vat lined chip...135.00—	
Chip tube and can stock.110.00—	
Single manila lined chip.150.00—	
Single jute lined chip..135.00—	
Kraft liner .....130.00 to 140.00	
White patent coated:	
.020 .....155.00—	
.018 .....157.50—	
.016 .....160.00—	

Book Paper f.o.b. New York— per cwt.

Machine coated, two sides

70 lb. No. 2 enamel; 25x 4 cases	$17.25
38-500, trimmed 4 sides. Carloads	$16.30
45 lb. enamel, 25x38-500, 4 cases	$13.05
trimmed 4 sides..... Carloads	$12.10

Uncoated

55 lb. No. 2 offset, 25x38 4 cases	$14.80
500, trimmed 4 sides.... Carloads	$13.85
50 lb. A Grade English Finish, 25x38-500, un 4 cases	$14.05
trimmed ..... Carloads	$13.10
20 lb. envelope, 17x22-500, untrimmed ..... Carloads	$12.40
16 lb. tablet, 17x22-500 ..... Carloads	$11.35

Rag Content Bond—

(White, 5,000 to 10,000 lbs., basis 16 lb.)

100% rag.....	59.80—
75% rag.....	45.45—
50% rag.....	30.20—
25% rag.....	29.70—

Rag Content Ledger—

(White, 5,000 to 10,000 lbs.)

100% rag.....	59.80—
75% rag.....	45.45—
50% rag.....	30.20—
25% rag.....	29.70—

Sulphite Bond—

(White, 5,000 to 10,000 lbs., basis 16 lb.)

No. 1.....	21.00—
No. 2.....	20.75—
No. 4.....	18.25—

Sulphite Ledger—

(White, 5,000 to 10,000 lbs.)

No. 1.....	21.50—
No. 2.....	20.50—
No. 4.....	19.00—

News delivered in New York— per ton

Rolls, Standard (Contract)	129.00 to 132.00
Rolls (Spot)	(Nominal)
Sheets	140.00—

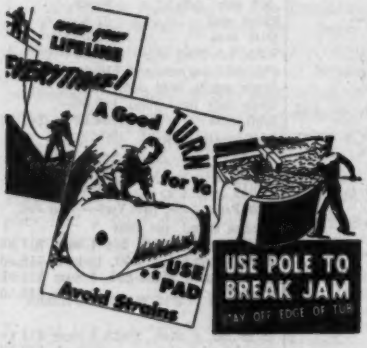
Tissues (Carlots) f.o.b. New York—

	per ream
White No. 1	2.00—
White No. 2	1.80—
Bleached Anti-Tarnish..	2.20—
Colored	2.00—
Anti-Tarnish Kraft ..	1.65—
Manila	2.00—
Napkins, semi-crepe (12½ lb. to M shts.) per cs.	1.00—
Napkins, full crepe and embossed (12½ lb. to Mshts.) per cs. ..	1.00—
Toilet, Bleached (M shts.) per cs....	9.35—
Toilet, Unbleached (M shts.) per cs. ..	7.00—

Wrappings (Kraft) f.o.b. New York— (Basis 50 lb. & heavier) per cwt.

Standard wrapping	8.50—
Butchers, counter rolls..	8.75—
Standard bag, mill rolls.	8.00—
Shipping sack, mill rolls.	8.25—
Gumming, mill rolls....	8.50—
Asphalting, mill rolls...	8.25—
Envelope, mill rolls....	9.75—

POSTERS
— A POTENT SAFETY TOOL



Posters should be one of the top aids in your safety program. No other safety medium can reach your entire audience—not once, but many times each day—with such low-cost safety messages. They are directed at the worker acts and worker attitudes that lead to accidents. Posters lend *timeliness, repetition and continuity* to your safety program . . . the three fundamental principles of direct selling.

The National Safety Council maintains a stock of posters that covers all industries, operations and phases of safety and health. These posters are produced in three sizes: "A" size, 8½" x 11½"; "B" size, 17x23"; and "C" size, 25x38". Their colorful illustrations and eye-catching captions make them ideal for the mass selling of safety.

Write for a free copy of the Directory of Occupational Safety Posters. This 72 page catalog illustrates 744 posters, indexed and classified for specific operations.

NATIONAL SAFETY COUNCIL

425 N. Michigan Ave.
Chicago 11, Illinois

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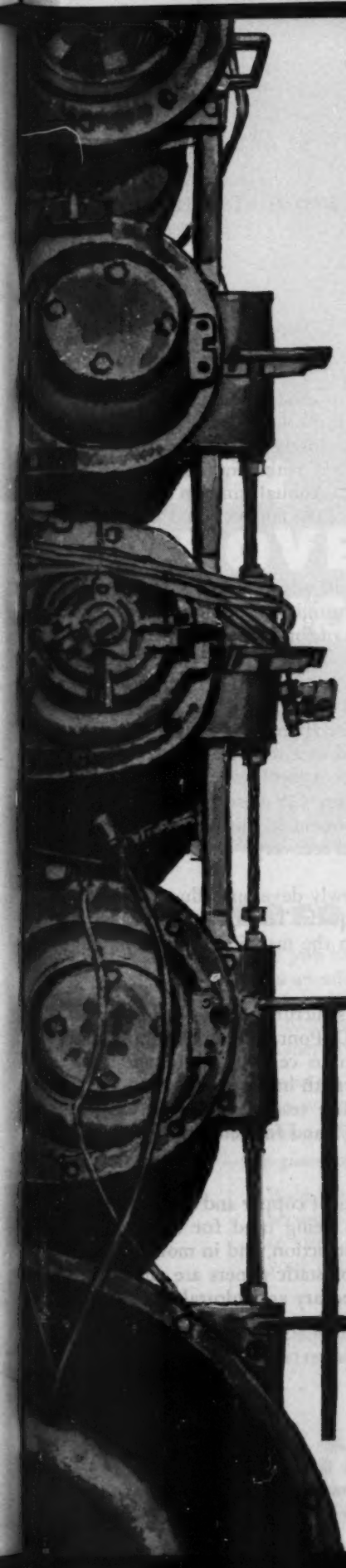

To the mill executive who decides on lubricants—

Three good reasons for specifying STANOIL Industrial Oil

1 The increased demand for paper products results in machinery being operated at speeds higher than rated capacity. Continuous production has placed greater burdens on lubricating oils. Without the best lubrication, equipment failures may occur. Best idea is to specify STANOIL Industrial Oil.

2 Cost of repairs and replacement of parts added to the loss of production, run many times the cost of lubrication. A small investment in STANOIL Industrial Oil is the best possible protection against bearing failures, repair costs and production loss.

3 STANOIL Industrial Oil can be used in a multitude of applications. Inventories of lubricants can thus be reduced and the danger of lubrication failure due to misapplication can be cut or even eliminated.

Get more facts about STANOIL from your nearby Standard Oil lubrication specialist. There is one near you in any of the 15 Midwest and Rocky Mountain states. Or write Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

Quick Facts About STANOIL Industrial Oil

- **Stability**—STANOIL's antioxidant gives oil resistance to chemical change, minimizes deposits.
- **Rust Prevention**—Inhibitor in STANOIL "plates out" on metal surfaces, prevents corrosion.
- **Cold Starts**—STANOIL has low pour point. Flows freely from cold start. No need for costly warm ups.
- **Resists Effects of Temperature Change**—STANOIL has high viscosity index, is resistant to temperature change. Lubricates in both high and low temperature service.
- **Has Excellent Demulsibility**—STANOIL is refined to eliminate emulsion problems, contains additive to minimize foaming.

STANDARD OIL COMPANY
(Indiana)

STANDARD

PAPER INDUSTRY

Whither?

... In production, processes, new products, markets

More pulpwood available from federal forests

An increased supply of timber from federally owned forests is being made available to the wood-using industries through the newly adopted government policy to extend cutting to a level more closely approaching the rate of annual new forest growth. This is in accord with modern theories of forest conservation and sound management. Annual timber sales from federally-owned forests are expected to rise to $100,000,000—a $70,000,000 increase over those realized in 1949-1950.

1956-1957 expansion program

The expansion planned for 1956 and 1957 will add 3,403,000 tons to the annual capacity of the U. S. paper industry, bringing total annual capacity at the end of 1957 to 34,178,000 tons. The cost of this expansion is estimated to be $1,300,000,000.

A new method of chemical recovery from waste liquor

A new method, developed by the Pulp and Paper Research Institute of Canada, consists of atomizing the liquor, in the absence of air, into the top of a tower, the walls of which are maintained at a temperature of 400° — 800° C. The resulting suspension then passes under pressure (up to 150 psi) through successive zones of (1) evaporation, (2) drying, and (3) chemical treatment. The facilities for chemical treatment in this operation makes this an intriguing method for selective chemical recovery.

A new concept of paper sizing

Treatment of paper on the machine with a newly developed fluorochemical size renders the paper repellent to organic liquids. This treatment makes it possible to produce grease-resistant papers on the machine without having to fill the voids in the paper sheet.

Synthetic-fiber papers for specialty uses

Synthetic-fiber papers are non-woven bonded structures made on papermaking machines. Experiments conducted in the DuPont laboratories show that papers made by the addition of 25% nylon to cellulose pulp and then bonded with polyamide binder show tear strength increases of about 350% and fold endurance increases of 4200%. The tear strength increase of papers made from 100% nylon is about 1400% and fold endurance increase 7500%.

Increased demand for biostatic papers

Papers treated with biocides, e.g. complex salts of copper and zinc, to render them mold-resistant and insect-repellent are being used for electrical insulation purposes, in basementless house construction, and in mold-resistant packaging. Greatly increased future uses of biostatic papers are anticipated in grain storage bins, tarpaulins, even in temporary agricultural water dams, etc.

FOR IMPROVED RETENTION

Here's THE SOLUTION

If you haven't investigated the advantages of using DARLING'S GLUE as an additive for improving retention, we believe it's worth your attention. The benefits derived from using a DARLING GLUE solution vary with mill conditions. Generally speaking, here is what to look for—

—a more uniform sheet . . . in terms of opacity, basis weight and ash content

—increased percentage of filler retained

—the possibility of faster machine speeds

We'd like to work with you in determining what can be accomplished in *your* mill. The cost is on us, so you've nothing to lose . . . plenty to gain. You can make arrangements through your DARLING sales representative. Or write or call us direct.

• *Promising results are also being obtained on* CYLINDER MACHINE *retention problems.*

DARLING'S improved BONE GLUE

DARLING & COMPANY
GLUE DIVISION
4201 South Ashland Avenue • Chicago 9, Illinois

FROM INGOT
. . . to your finished fourdrinier wire, every step is under our own rigid system of controls—laboratory analysis, inspection and testing.
to FOURDRINIER WIRE
. . . . in a completely integrated plant

EASTWOOD-NEALLEY CORP.

Belleville · New Jersey